

No. 126

_____ *

In The

Supreme Court of the United States

_____ *

STATE OF KANSAS,

Plaintiff,

v.

STATE OF NEBRASKA

and

STATE OF COLORADO,

Defendants.

_____ *

BEFORE THE OFFICE OF THE SPECIAL MASTER

_____ *

Quality Inn
Taken at 1400 Southeast Bishop Boulevard
Pullman, Washington
Wednesday, February 8, 2012 - 1:15 p.m.
and
Thursday, February 9, 2012 - 8:05 a.m.

D E P O S I T I O N

O F

JOEL R. HAMILTON, Ph.D.

A P P E A R A N C E S

JOHN B. DRAPER and DONNA ORMEROD, Esqs., of the law firm of Montgomery and Andrews, 325 Paseo de Peralta, Post Office Box 2307, Santa Fe, New Mexico 875012307, appearing on behalf of the Plaintiff State of Kansas.

CHRISTOPHER M. GRUNEWALD, Esq., Civil Litigation Division, the Office of the Attorney General for the State of Kansas, 120 Southwest Tenth Avenue, Second Floor, Topeka, Kansas 66612-1597, appearing on behalf of the Plaintiff State of Kansas.

TOM WILMOTH and DON BLAKENAU, Esqs., of the law firm of Blakenau Wilmoth, LLP, 206 South Thirteenth Street, Suite 1425, Lincoln, Nebraska 68508, appearing on behalf of the Defendant State of Nebraska.

JUSTIN D. LAVENE, Esq., Section Chief, Agriculture, Environment, and Natural Resources, of the Office of the Attorney General for the State of Nebraska, 2115 State Capitol, Lincoln, Nebraska 68509-8920, appearing on behalf of the Defendant State of Nebraska.

PETER J. AMPE, Esq., of the law firm of Office of the Attorney General for the State of Colorado, 1525 Sherman Street, Seventh Floor, Denver, Colorado 80203, appearing on behalf of the Defendant State of Colorado.

ALSO PRESENT: M. Henry Robison, Ph.D., and others.

1	I N D E X	
2	WITNESS:	PAGE:
3	JOEL R. HAMILTON, Ph.D.	
4	February 8, 2012	
5	Examination by Mr. Wilmoth.....	6
6	February 9, 2012	
7	Examination continued by Mr. Wilmoth.....	134
8	Stipulations.....	5
9	Certificate of Witness.....	161
10	Certificate of Court Reporter.....	162
11	EXHIBITS MARKED FOR IDENTIFICATION:	
12		
13	Deposition Exhibit No. 1 - Copy of notice of	
14	deposition.....	7
15	Deposition Exhibit No. 2 - Copy of Dr.	
16	Hamilton's CV.....	7
17	Deposition Exhibit No. 3 - Copy of Economic	
18	Analysis of Kansas Losses from Overuse	
19	of Republican River Water by Nebraska in	
20	2005 and 2006.....	8
21	Deposition Exhibit No. 4 - Copy of Economic	
22	Analysis of Nebraska Benefits from Overuse	
23	of Republican River Water by Nebraska in	
24	2005 and 2006.....	8
25	Deposition Exhibit No. 5 - Copy of an article	
	published by the University of New Mexico,	
	School of Law.....	20
	Deposition Exhibit No. 6 - Copy of Economic	
	Importance of ESRPA-Dependant Springflow	
	to the Economy of Idaho.....	44
	/////	

1 EXHIBITS MARKED FOR IDENTIFICATION: (Ctd) PAGE:

2 Deposition Exhibit No. 7 - Copy of crop census
for 2005 prepared by Kansas Bostwick
3 Irrigation District No. 2..... 91

4 Deposition Exhibit No. 8 - Copy of Economic
Impacts, Value Added, and Benefits in
5 Regional Project Analysis..... 113

6 Deposition Exhibit No. 9 - Copy of LexisNexis
document, in re: Interregional Spillovers
7 in Regional Impact Assessment: New Mexico,
Texas, and the Supreme Court..... 126

8
Deposition Exhibit No. 10 - Copy of a report
9 prepared by KBID..... 146

10 Deposition Exhibit No. 11 - Copy of a review of
The Economic Impact of a Possible
11 Irrigation-Water Shortage in Odessa Sub-
Basin..... 159

12

13

14

15

16

17

18

19

20

21

22

23

Reported by Gloria J. McDougall, CSR, RPR,
24 CP, Freelance Court Reporter and Notary Public, within
and for the States of Idaho and Washington, residing in
25 Clarkston, Washington.

1 S T I P U L A T I O N S

2 It was stipulated by and between Counsel for
3 the respective parties that the deposition be taken by
4 Gloria J. McDougall, CSR, RPR, CP, Freelance Court
5 Reporter and Notary Public for the States of Idaho and
6 Washington, residing in Clarkston, Washington.

7

8 It was further stipulated and agreed by and
9 between Counsel for the respective parties and the
10 witness that the reading and signing of the deposition
11 would be expressly reserved.

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 WEDNESDAY, FEBRUARY 8, 2012 - 1:15 P.M.

2 Thereupon,

3 JOEL R. HAMILTON, Ph.D.,

4 a witness of lawful age, having first been duly sworn

5 upon his oath to tell the truth, the whole truth and

6 nothing but the truth, testified as follows:

7 MR. WILMOTH: Good afternoon, Dr. Hamilton.

8 DR. HAMILTON: Good afternoon.

9 MR. WILMOTH: Thank you for joining us today.

10 My name is Tom Wilmoth. I'm counsel for the
11 State of Nebraska in this matter, and I have with me Don
12 Blakenau, from my firm, Justin Lavene from the Attorney
13 General's Office and some consultants that work with us.

14 EXAMINATION

15 BY MR. WILMOTH:

16 Q. What I would like to begin with is just a copy
17 of your notice of deposition and ask you if you have
18 seen this before?

19 A. Yes, I have.

20 Q. Very good. And just for the record could you
21 state and spell your full name for me?

22 A. Joel, J-O-E-L; Raymond, R-A-Y-M-O-N-D;
23 Hamilton, H-A-M-I-L-T-O-N.

24 Q. Thank you very much. And the deposition notice
25 requested that you bring any materials supplemental to

1 your report. Have you brought anything today?

2 A. No.

3 Q. Okay. Thank you.

4 MR. WILMOTH: Let's go ahead and mark this as

5 Exhibit 1 to the deposition, please.

6 EXHIBITS:

7 (Deposition Exhibit No. 1 marked for

8 identification.)

9 Q. (BY MR. WILMOTH) And then I would like to turn

10 to your curriculum vitae which we will mark as Exhibit 2

11 to the deposition.

12 EXHIBITS:

13 (Deposition Exhibit No. 2 marked for

14 identification.)

15 Q. (BY MR. WILMOTH) Dr. Hamilton, do you

16 recognize this document?

17 A. Yes, I do.

18 Q. Is that a copy of your curriculum vitae?

19 A. Yes.

20 Q. Thank you.

21 MR. WILMOTH: This has been marked Exhibit 2?

22 THE REPORTER: Yes.

23 Q. (BY MR. WILMOTH) Doctor, I'm going to hand you

24 copies of two reports and simply ask if you would

25 identify these two reports for me. Let's begin with the

1 report marked KS544 in the lower right-hand corner.

2 EXHIBITS:

3 (Deposition Exhibit Nos. 3 and 4 marked for
4 identification.)

5 Q. (BY MR. WILMOTH) So, you should have one
6 document marked KS544 and a second document marked
7 KS612. I would like to mark those as 3 and 4
8 respectively to the deposition.

9 Could you please identify these documents for
10 me?

11 A. The KS 544 document is titled Economic Analysis
12 of Kansas Losses from Overuse of Republican River Water
13 by Nebraska in 2005 and 2006 dated November 18, 2011.
14 And the second document KS 612 is titled Economic
15 Analysis of Nebraska Benefits from Overuse of Republican
16 River Water by Nebraska in 2005 and 2006 dated November
17 18, 2011.

18 Q. Thank you. And did you participate in
19 preparing these reports?

20 A. Yes.

21 Q. Thank you very much. We will talk about those
22 reports in a moment.

23 But I would like to return to Exhibit 2 which
24 is your curriculum vitae. Is your complete educational
25 background set forth in this CV, Doctor?

1 A. Yes.

2 Q. I notice you attended the University of
3 California at Berkley. Could you explain the nature of
4 your education at that institution?

5 A. I attended, University of California at Berkley
6 between 1966 and 1970, enrolled in a Ph.D. program in
7 agricultural economics. I earned the Ph.D. in 1971.

8 Q. And would you consider that institution a
9 leading institution for agricultural economics?

10 A. Yes.

11 Q. Is your professional experience completely set
12 forth on your CV?

13 A. Yes. In the section of your CV entitled "other
14 professional experience," you list the Martin Institute
15 for Peace Studies and Conflict Resolution.

16 Q. Could you elaborate on the purpose of that
17 institute and the role that you played there?

18 A. The institute was set up by -- originally by
19 Professor Martin to -- to do research and education in
20 the areas of peace studies and conflict resolution. I
21 was named as interim director of it in the early years
22 of the institute. I served half time as interim
23 director and half time in my home department of
24 agriculture and economics. In that role I worked to
25 advance the programs of the institute in teaching and

1 research.

2 Q. What was the typical type of conflict that you
3 were attempting to be resolved?

4 A. We were involved with a wide range of
5 conflicts, including local conflicts in the
6 administration of a swim team to a -- essentially what
7 we called a second track dialog which we were involved
8 with which was -- which brought in people involved in
9 the water conflicts in the Middle East. Participants
10 from all of the affected party in the Middle East water
11 situation for a -- for a dialog.

12 Q. And what was the nature of that particular
13 conflict over Middle East water?

14 A. Water is one of the central issues in the
15 ongoing conflict between especially Israel and Jordan
16 but, also most of the other countries in the region.

17 Q. Was there a particular river system at issue?

18 A. The Jordan, the Nile, the Euphrates River.

19 Q. So, just really the whole regional --

20 A. The whole regional water situation.

21 Q. Very good. Did you develop an expertise in
22 conflict resolution through that role?

23 A. Yes.

24 Q. And could you describe for me the nature of
25 that expertise?

1 A. I have participated as facilitator in various
2 conflicts. I have participated as instructor in some
3 conflict resolution workshops.

4 Q. Are you familiar with the dispute resolution of
5 provisions of the final settlement stipulation or the
6 FSS as we frequently call it in this case?

7 A. I am aware they exist. I have not examined the
8 technique.

9 Q. Do you have any opinion about the functionality
10 of the RCA's ability to resolve conflicts as an expert?

11 A. I understand they are non-binding.

12 Q. You also note on your CV various fields of
13 interest. I'm curious by what you mean by that. Does
14 that mean you have some formal education or training in
15 these fields?

16 A. Yes. I guess the best way to answer that is
17 yes.

18 Q. So, I guess what I'm getting at is, it is more
19 than an interest; it's something in which you have some
20 experience?

21 A. Yes. I have experience in some of these. The
22 education may be informal, but through workshops and so
23 on; but, yes, as opposed to classroom, but yes.

24 Q. So, would it be fair to say that the education
25 or the experience you have in each of these fields is

12

1 further developed in the CV?

2 A. Yes.

3 Q. Are there any areas listed here for which you
4 would like to elaborate on your education or experience?

5 A. No.

6 Q. How long have you been involved as an expert
7 for the State of Kansas in water disputes?

8 A. Can you repeat that, please? One thing you
9 will notice is occasionally my hearing is marginal. I
10 have hearing aids in both ears, and you're doing quite
11 well at the moment.

12 Q. No problem. Sometimes my questions are
13 marginal at best. I understand. I'll do my best.

14 My question was, how long have you been
15 employed as a consultant for the State of Kansas in
16 water disputes of any kind?

17 A. I was involved in the Ark River case which was
18 my first work with the State of Kansas.

19 Q. And could you just generally elaborate on what
20 you -- what functions you performed in that case?

21 A. I was involved in the preparation of the
22 economic expert report in that case.

23 Q. And does that -- does that work inform your
24 work in this case?

25 A. Yes.

1 Q. Did you rely upon principles in this case that

2 you built upon from the prior case?

3 A. Yes.

4 Q. Generally what would those have been?

5 A. We looked at the direct impacts of the water

6 efficiency on agriculture in the region and calculated

7 estimates of economic impact, direct impact, and we used

8 models of the regional economy to estimate secondary

9 impacts and....

10 Q. Were there any aspects of your prior work in

11 the Arkansas case that you did not feel applied in this

12 case?

13 A. I don't think so.

14 Q. Do you recall what your total compensation was

15 for the work you did in the Arkansas case?

16 A. No.

17 Q. Can you tell me what your compensation has been

18 in this case thus far?

19 A. I believe that I submitted that as part of my

20 original filing. I do not remember the number.

21 Q. And I believe the filing you're referring to

22 was offered sometime in November. Has there been no

23 additional work performed by you in this case?

24 A. There was a small amount of additional....

25 Q. Consistent with the prior rate structure

1 essentially?

2 A. Yes.

3 Q. Do you have any other work that you're
4 presently performing for Kansas?

5 A. No.

6 Q. Do you have any desire to obtain additional
7 work from the State of Kansas?

8 A. No.

9 Q. Doctor, I would like to hand you a paper that I
10 believe you prepared, but I would like for you to review
11 it briefly and ask you whether it looks familiar to you?

12 A. (Witness complies.) Yes. This does look
13 familiar.

14 Q. Could you briefly identify this paper and its
15 purpose?

16 A. The title of the paper, A Review of Economic
17 Impact on Possible Irrigation-Water Shortage in Odessa
18 Sub-Basin: Potato Production and Processing, Sonjoy
19 Bhattacharjee and David Holland, School of Economic
20 Sciences.

21 Q. Did you author this paper?

22 A. Yes, I did.

23 Q. And what was your purpose in doing so?

24 A. The.... I was asked by a group, which is sort
25 of a watch-dog group looking at water issues in the

1 State of Washington, to -- to respond to the paper by
2 Bhattacharjee and Holland.

3 Q. Who are the general constituents that comprise
4 this watch-dog group?

5 A. I can't remember the name of the principal. I
6 know his first name is John. He's not a close friend.

7 Q. Are they individuals?

8 A. They are individuals, and -- but there is a
9 nonprofit group which they are also supportive of.

10 Q. Do you know what those individuals do for a
11 living?

12 A. One of the principals, John, is in fact a
13 medical doctor, his wife is a lawyer, and the two of
14 them are the main movers of the organization.

15 Q. I see. And can you describe the organization's
16 purpose? Are you familiar with that?

17 A. The organization's purpose is to look at
18 development -- water development and water issues in the
19 State of Washington.

20 Q. What was the nature of your direction from this
21 group in preparing the paper?

22 A. I was directed to offer my opinions of the work
23 by doctor Bhattacharjee and Holland.

24 Q. Let's just say B and H.

25 A. Yeah. I could say Dave because he's a friend

1 of mine.

2 Q. All right. Well, if you will allow me to use
3 that shorthand, can you tell me what Dave's conclusions
4 generally were?

5 A. The issue, of course, was -- is an area of
6 irrigation currently outside of the Columbia Basin
7 Project was suffering from severely declining
8 groundwater levels, and Holland addressed the economic
9 impact of that groundwater decline and came up with some
10 very large impacts which were being used by other groups
11 in Central Washington to try to justify expansion of the
12 pump basin project to supply water to the areas outside
13 of the original project.

14 Q. So, the plan would be to convert those
15 groundwater uses to surface water contracts?

16 A. Correct.

17 Q. As part of your reclamation project?

18 A. Correct.

19 Q. And how did your conclusions differ with those
20 of Dave's?

21 A. I have not looked at this report for some time,
22 but my memory is that I concluded that Dave's numbers
23 were -- Dave's measures of economic impact were far --
24 far higher than I thought were appropriate.

25 Q. I know it may have been some time since you

1 looked at this. I would like to turn your attention to
2 page three, and there's a heading there entitled
3 "Improper Use of the 'Worse Case' Scenario 3." I
4 interpreted this as being critical of the use of worse
5 case scenarios for projecting behavior of agricultural
6 producers; is that a fair interpretation?

7 A. Give me a moment to read this.

8 Q. Absolutely. Take your time.

9 A. Okay. And could you repeat the question.

10 MR. WILMOTH: Can you read it back, starting
11 with I interpret....

12 (Whereupon, part of the last question was read
13 back.)

14 Q. (BY MR. WILMOTH) Okay. Let's strike that and
15 start over.

16 My inference is that you're being critical of
17 the use of the worse case scenario for purposes of
18 projecting the behavior of agricultural producers. Is
19 that a correct inference?

20 MR. DRAPER: Are you asking in general worse
21 case scenarios or worse case scenarios in this
22 particular instance?

23 MR. WILMOTH: Both.

24 A. Well, I can only answer in terms of the way I
25 worded it in the report, that I am objecting to Dave's

1 use of their self-identified worse case scenarios.

2 Q. (BY MR. WILMOTH) What was the basis of that
3 objection, as you put it?

4 A. Well, that is outlined in page four in my
5 underlying section where I went through several reasons
6 why Dave's worse case scenario is unlikely to be carried
7 through.

8 Q. As a general matter, do you believe it is
9 appropriate to use worse case scenarios to project
10 agricultural producers' behavior?

11 A. Only if the worse case scenario is plausible.

12 Q. What factors would make it plausible?

13 A. Analysis of the likelihood of various
14 eventualities.

15 Q. A statical probability analysis, is that what
16 you're --

17 A. A possibility.

18 Q. On pages four and five -- and I understand
19 you're needing some time to refresh your recollection
20 about this and that's fine -- again, I infer that you
21 are concluding that gross output is not the best measure
22 of economic impact. Is my inference correct?

23 A. Correct.

24 Q. And what is a better measure as identified
25 here?

1 A. Better measure would be impacts on income.

2 Q. And employment?

3 A. Yes. They are two separate measures.

4 Q. Income and employment are two separate
5 measures; is that what you mean?

6 A. The employment and income, so the two measures
7 overlap.

8 Q. Is that universally true that employment and
9 income are better measures than gross output?

10 MR. DRAPER: For what purpose?

11 MR. WILMOTH: For purposes of measuring
12 economic impact.

13 MR. DRAPER: If you understand the question.

14 MR. HAMILTON: I understand the question.

15 MR. WILMOTH: It may be one of those marginal
16 questions.

17 A. I'm hunting for exceptions. I'm inclined --
18 I'm inclined to say that employment and income are
19 better measures than gross output, yes.

20 Q. (BY MR. WILMOTH) How is that preference
21 reflected in the expert reports you have provided in
22 this case?

23 A. We have in both reports estimated impact on
24 income.

25 Q. So, in your view, is your analysis consistent

1 with this preference as expressed in your paper?

2 A. Yes.

3 Q. Okay. Doctor, I'll hand you another article
4 that was referenced in your CV and just ask you to
5 identify this article.

6 A. The title of the article is Secondary Damages
7 in Interstate Water Compact Litigation. It's in the
8 Natural Resources Journal, summer of 2008.

9 Q. And did you participate in authoring this
10 document?

11 A. Yes, I did.

12 Q. Do you know when Kansas initiated the
13 arbitration proceedings that have now culminated in this
14 case?

15 A. I do not know the date for that.

16 Q. Did you ever discuss the incident proceeding
17 with Kansas when you were developing this article?

18 A. Could you repeat that?

19 Q. When you were developing the article --

20 A. Uh-huh.

21 Q. -- that will be marked as Exhibit 5 --

22 EXHIBITS:

23 (Deposition Exhibit No. 5 marked for
24 identification.)

25 Q. (BY MR. WILMOTH) -- did you discuss the

1 present case with your co-authors?

2 A. I -- no.

3 MR. DRAPER: What was Exhibit 4?

4 MR. BLANKENAU: It was the Economic Analysis of
5 Nebraska Overuse.... KS 612.

6 MR. DRAPER: Thank you.

7 Q. (BY MR. WILMOTH) I would like to turn your
8 attention to page six eighty-two. If you look at the
9 top portions of the pages, they are numbered there.

10 A. (Witness complies.)

11 Q. At the top of that section, Doctor, you note
12 that the range of cases in which secondary damages
13 analysis might be relevant is narrow but could include
14 at least other interstate water compact cases. Upon
15 what did you base your conclusion?

16 A. I believe that ultimately comes down to a point
17 of law, and given that I'm not a lawyer, I tread there
18 with trepidation. But if it relates to the fact that
19 the secondary damages accrue to a wide range of
20 participants throughout the state and since in general
21 under the Constitution, the states are not supposed to
22 be acting to aggregate a range of individual suits, I
23 don't know the proper legal terms for -- for talking
24 about that.

25 Q. That's okay. I'm interested in your use of the

1 word "could" in that sentence.

2 A. Which -- which sentence?

3 Q. The one we are just discussing at the top of
4 six eighty-two. Do you see that reference? That narrow
5 range could include --

6 A. Uh-huh.

7 Q. Does that mean that there are some cases it
8 would not be appropriate to use this analysis in?

9 MR. DRAPER: Again, you're not asking him for a
10 legal conclusion, I presume?

11 MR. WILMOTH: No. I'm -- when someone uses the
12 word "could" it implies sometimes that there -- it's not
13 an absolute.

14 DR. HAMILTON: Yeah.

15 A. A case of -- in an individual case of damages.
16 You do something to me, and I sue for damages. I can't
17 -- secondary damages don't -- don't apply.

18 MR. WILMOTH: Okay. Thank you.

19 Q. (BY MR. WILMOTH) I would like to direct your
20 attention to page six ninety-two now.

21 A. (Witness complies.)

22 Q. About halfway down this page, you're talking
23 about the difficulty of this concept as applied to
24 individual claims as I read it; is that correct?

25 A. Yes.

1 Q. Is that consistent with what we've just
2 discussed?

3 A. Yes.

4 Q. All right. And as I understand it, you have
5 concluded that it's difficult for the individual to show
6 proximate cause of those secondary damages?

7 A. Yes.

8 Q. In the interstate water case, is that proximate
9 cause just assumed?

10 A. It is....

11 Q. Given the nature of the litigants involved?

12 A. Given the nature of the litigation and given
13 the fact that in general water is assumed to be property
14 of the state, the -- it's possible using models to trace
15 impacts through economic linkages of the state. And I
16 mean, that's -- those linkages are the proximate cause
17 that you talk of, economic linkages.

18 Q. So, help me understand that a little bit. When
19 you talk about proximate cause, you're talking about the
20 relationship between a direct and secondary impact?

21 A. Yes.

22 Q. Okay. You're not talking about the
23 relationship between an event, such as the failure to
24 comply with a compact and a directive?

25 A. No.

1 Q. So, is that particular proximate cause
2 relevant?

3 MR. DRAPER: Which proximate cause?

4 A. Yes, I'm not --

5 Q. (BY MR. WILMOTH) I'm trying to understand the
6 concept of proximate cause as explained here, and I
7 thought it was something different than what I just
8 heard. So, I'm just trying to understand what the
9 concept means as applied in this paper.

10 A. In the paper, we are talking about the linkage
11 between direct impacts and secondary impacts.

12 Q. Oh.

13 A. That's the topic of the paper.

14 Q. Very good. Very good.

15 So, what is the role in your analysis in the
16 present case with regard to proximate cause between
17 Nebraska's actions and the direct impacts in Kansas?
18 How did you identify that proximate cause, or is it
19 assumed?

20 A. Well, what we did was to take a given amount of
21 water shortage and identify the impacts that that had on
22 farm production. Now, I guess -- is that what you're
23 referring to as "proximate cause?"

24 MR. WILMOTH: Can you read that back, please.

25 (Whereupon, the answer was read back.)

1 Q. (BY MR. WILMOTH) I'm referring to the
2 proximate cause of the water shortage.

3 MR. DRAPER: Just to be clear, the proximate
4 cause of the water shortage. In other words, what
5 caused the water shortage in this case?

6 MR. WILMOTH: Yes.

7 A. That was given to me by Spronk Engineering.

8 Q. (BY MR. WILMOTH) So, you made no independent
9 determination of the proximate cause of the direct
10 damages that you identified in your report?

11 A. I made no determination of the cause of the
12 water shortage.

13 Q. Thank you.

14 On page six ninety-five of this same document,
15 in the first full paragraph, first sentence, you note
16 the IMPLAN models were not the only choice or
17 necessarily always the best choice. Do you see that.

18 A. Yes.

19 Q. What do you see as the limitations of the
20 IMPLAN model in this context?

21 A. The IMPLAN model has some rigidities to it --

22 Q. I'm sorry. What was the word? Racidities?

23 A. Rigidities.

24 Q. Rigidities, pardon me.

25 A.to it which do not address some....

1 interrelationships which could be important in some
2 cases.

3 Q. All right. I'm going to take that statement
4 and break it down in three parts. Can you identify for
5 me the interrelationships to which you just referred?

6 A. The basic IMPLAN model works with -- well, it
7 defines various industries or sectors of the economy,
8 and each of those sectors has a -- physically a fixed
9 menu of inputs which it purchases these inputs from.
10 That fixed menu of inputs by sector is one rigidity.

11 Q. Are there others?

12 A. That's the most important one that I would
13 highlight.

14 Q. And with regard to these inputs, how are they
15 developed?

16 A. Let me preface this by saying that Hank is who
17 you get to tomorrow is more of an expert on this than I,
18 but --

19 Q. And I should say if Dr. Robison handled this, I
20 can direct questions to him.

21 A. I -- I would prefer that that question be
22 deferred to Hank.

23 Q. Now, you say these interest relationships can
24 be important in some cases. What do you mean by
25 importance and in which cases?

1 A. Since the models are sometimes used in multiple
2 years and since they -- if my models are -- since the
3 models are denominated in terms of dollars, flows of
4 dollars, if prices change, then the....the menu of
5 inputs to a sector should change, but don't necessarily
6 do so.

7 Q. How often are those inputs by sector updated?

8 A. Again, I'll defer that to Hank.

9 Q. And in which cases would that kind of
10 interrelationship be important to recognize or address?

11 A. If there were substantial price changes.

12 Q. Prices of the inputs?

13 A. Prices of the inputs and prices of the outputs.

14 Q. And by "change," do I understand you to say
15 year-to-year changes?

16 A. Oh -- or with respect to a with or without
17 scenario that's being analyzed.

18 Q. Okay. Are there other choices of models that
19 can be used to do this type of analysis?

20 A. Yes, there are, but they all have their own
21 shortcomings.

22 Q. Are you familiar with the RIMS II model? Does
23 that ring a bell?

24 A. I've heard of it, but I'd defer those questions
25 to Hank.

1 Q. Very well.

2 I direct your attention to a final statement in
3 this journal entry.

4 A. (Witness complies.)

5 Q. What did you mean by that statement?

6 MR. DRAPER: Is this the statement on six
7 ninety-six?

8 MR. WILMOTH: Yes. It's the very last sentence
9 of the article.

10 MR. DRAPER: That's the sentence that begins
11 "meanwhile?"

12 MR. WILMOTH: Yes. It reads, Meanwhile, it is
13 important that economists continue to refine the theory
14 and methods required to properly estimate these
15 secondary damages.

16 A. Better estimates are always good.

17 Q. (BY MR. WILMOTH) Okay. In this article --

18 A. I don't see any reason to elaborate.

19 Q. So, if, for example, a model or a scenario or
20 projection is completed, you still seek to refine it and
21 better understand it?

22 A. Yes, I'm an academic. We always like to dig
23 deeper.

24 Q. There you go. And this article was authored in
25 the summer of 2008, correct?

1 A. Correct.

2 Q. Have you refined your theories or methods at
3 all since this article was authored?

4 A. Yes.

5 Q. How so?

6 A. In -- in one aspect which grows out of this
7 case, Professor Sonjink in his discussion in the -- with
8 respect to the non-binding arbitration pointed out that
9 a damage payment would, in fact, have an induced impact.
10 We concur in that.

11 Q. And that's addressed in one of your reports,
12 correct?

13 A. Correct.

14 Q. And finally is the National Resources Journal a
15 peer-reviewed article?

16 A. Yes.

17 Q. Peer-reviewed journal, excuse me. Thank you.

18 Do you know who participates on the peer-review
19 committee?

20 A. No.

21 Q. Are they -- do you know if they are legal folks
22 or technical folks?

23 A. The journal is a -- I believe a journal of the
24 of the University of New Mexico Law School.

25 Q. So, lawyers it sounds like?

1 A. (Witness nods head.)

2 MR. DRAPER: You have to answer out loud. You
3 have to answer audibly.

4 DR. HAMILTON: Okay.

5 THE REPORTER: You just nodded your head.

6 DR. HAMILTON: Oh.

7 Q. (BY MR. WILMOTH) So, for the record the
8 journal is peer reviewed by lawyers --

9 A. Yes.

10 Q. -- correct?

11 Doctor, I'm going to hand you an additional
12 paper and ask if you recognize this paper?

13 A. Yes, I do.

14 Q. Can you identify for the record the nature of
15 this document?

16 A. The title "Economic Importance of" -- we will
17 spell it out -- "Economic Importance of ESRPA, Eastern
18 Snake River Plane Aquifer, Dependant Springflow to the
19 Economy of Idaho."

20 Q. And did you author this paper?

21 A. Yes, I did.

22 Q. For whom did you author this paper?

23 A. I authored it for a group of surface-water
24 users in Southern Idaho.

25 Q. And what was the purpose of the paper?

1 A. There has been an ongoing dispute between
2 surface-water and groundwater users in Southern Idaho.
3 The surface-water users have senior water rights and the
4 ongoing development of groundwater has resulted in
5 declines of the -- of deliveries to the surface-water
6 users. I was asked by the surface-water users to look
7 at the economic impacts of that.

8 Q. Of the groundwater development?

9 A. Well, in part, in looking at the entire
10 economic impact. It's been -- the date on this paper is
11 2004, which that's eight years ago.

12 Q. Sure.

13 A. I have not looked at this for some time.

14 Q. Well, why don't you take five minutes and have
15 a look at that.

16 MR. WILMOTH: And why don't we take a break.

17 DR. HAMILTON: Okay.

18 MR. WILMOTH: Ten, if you need it.

19 (Whereupon, the deposition was in recess at
20 2:05 p.m. and subsequently reconvened at 2:20 p.m.; and
21 the following proceedings were had and entered of
22 record:)

23 MR. WILMOTH: All right. Ready to resume?

24 MR. DRAPER: Yes.

25 DR. HAMILTON: Yes.

1 Q. (BY MR. WILMOTH) So, turning back to the
2 report that we were discussing, could you describe the
3 purpose of this analysis?

4 A. Purpose of the analysis was to describe the
5 economic importance of the sectors dependent on
6 springflows on the Southern Idaho Snake River.

7 Q. And those are interests listed on page one as
8 the organizations supporting this study?

9 A. Many of the organizations listed on page one
10 are dependent on springflows.

11 Q. So, is it correct to say that this report was
12 prepared for surface-water interests primarily?

13 A. Yes.

14 Q. And do you do most of your work on behalf of
15 surface-water interests?

16 A. No.

17 Q. Have you ever conducted economic analyses on
18 behalf of groundwater users?

19 A. Yes.

20 Q. For whom have you conducted such analyses?

21 A. Groundwater users were a significant part of
22 the affected parties in the Ark River case.

23 Q. Who was your client in that case?

24 A. State of Kansas.

25 Q. So, you weren't working directly for

1 groundwater users, though?

2 A. No.

3 Q. Have you ever done any work for groundwater
4 users only?

5 A. No. At least not that I remember.

6 Q. Do you have any inherent preference for
7 surface-water users?

8 A. No.

9 Q. I notice that this report bears a moniker
10 Hamilton Water Economics. Can you identify that
11 organization?

12 A. Sometimes I use that as a professional name.
13 It is essentially me.

14 Q. It's not incorporated as a separate entity?

15 A. No.

16 Q. It's like a d/b/a or doing business as thing?

17 A. No.

18 Q. Have you ever performed any other work under
19 that flag?

20 A. I believe I'm so designated in this case when I
21 submit an invoice.

22 Q. So, Hamilton Water Economics is just shorthand
23 for you essentially?

24 A. Correct.

25 Q. I would like to turn your attention to page two

1 of the report?

2 MR. DRAPER: That's Deposition Exhibit 6.

3 MR. WILMOTH: Well, I haven't marked it yet,
4 John. I just want to walk through it first.

5 MR. DRAPER: Oh.

6 MR. WILMOTH: But it would be, yes.

7 Q. (BY MR. WILMOTH) The third full paragraph
8 there seems to contain a caution about drawing
9 conclusions concerning the costs and benefits of
10 groundwater curtailment scenarios. Do you see that?

11 A. Are you referring to a particular sentence?

12 Q. The first sentence of the third whole paragraph
13 beginning, While it might be tempting...

14 A. Yes.

15 MR. DRAPER: What was the question about that
16 sentence?

17 Q. (BY MR. WILMOTH) My question was, Does this
18 contain a caution against drawing conclusions about the
19 costs and benefits about groundwater curtailment
20 scenarios?

21 A. It is a caution about drawing conclusions in
22 that particular case because the curtailment scenario
23 had never had been fully articulated.

24 Q. And in the second sentence there, is that
25 really the basis of the concern?

1 A. Yes.

2 Q. And can you just describe how the factors
3 listed in that second sentence are relevant?

4 A. Well, I'm saying that no curtailment scenario
5 has been -- have been fleshed out, which groundwater
6 pumpers it would apply to, methods of implementation.

7 Q. Uh-huh.

8 A. And payment --

9 Q. So, in a sense --

10 A. -- payment is critical.

11 Q. So, in the succeeding sentence, you indicate,
12 We as yet have no models to show how the curtailed
13 junior appropriators who farm or those irrigators who
14 remain would respond. How would that issue affect your
15 analysis? Why is it important to know the answer to
16 that question?

17 A. The farmers would respond to how the parameters
18 listed in the previous sentence were implemented. The
19 response would depend on a scenario of any curtailment.

20 Q. So, unless you know the scenario of the
21 curtailment, you can't interpret their response or opine
22 about their likely response; is that what you're
23 suggesting?

24 A. Yes, sir.

25 Q. The following sentence indicated, We do not

1 know how many junior appropriators also have senior

2 water rights either for surface-water or for

3 groundwater. Is this the same general issue?

4 A. Yes.

5 Q. Then you follow with, We don't have models to

6 show how springwater users would respond to restored

7 flows. Same concern?

8 A. Yes.

9 Q. And in this particular case, you had no models

10 showing how the changes in production patterns translate

11 to changes in income or fiscal impacts; is that correct?

12 A. Yes.

13 Q. And until you know the curtailment scenario,

14 you can't really know any of those things; is that what

15 is you're suggesting?

16 A. That is what I was suggesting.

17 Q. Let me turn your attention to page thirty-four?

18 A. (Witness complies.)

19 Q. Does this reflect the same kinds of concerns we

20 were just discussing?

21 A. Yes, it does.

22 Q. And as I understand this, you're identifying

23 various models that would be needed to analyze a

24 particular curtailment regime; is that right?

25 A. Yes.

1 Q. Which of these did you employ in your analysis
2 in this litigation, in the Kansas V Nebraska litigation?

3 A. In the second paragraph I refer to, Due to
4 economic analysis, we would need models to show how the
5 curtailed farmers and remaining irrigators would
6 respond. We did, in fact, in this analysis develop such
7 models.

8 Q. Which models?

9 A. Models of how the -- what the direct impacts on
10 farmers would be. And the item designated as, Third, we
11 would need models to show how these changes in
12 production patterns translate into changes in income and
13 into fiscal impacts for the state budget. The impact on
14 income was what was done with the IMPLAN models which we
15 used in this case.

16 Q. So, the producer responses are the direct-
17 effects --

18 A. Correct --

19 Q. -- analysis?

20 A. Correct.

21 Q. So, in your view, that direct-effects analysis
22 identifies who would enroll for preventive-planting
23 payments, for example?

24 A. Who --

25 Q. Who would enroll in preventive-planting

1 payments, is that the kind of response that you're
2 referring to in this document?

3 A. In the Kansas analysis, we did -- did include
4 the enrollment in preventive planting.

5 Q. Is that enrollment the kind of response that
6 you were talking about modeling in this paper
7 (indicating)?

8 A. In the -- in the Republican River analysis, it
9 was not necessary to model that.

10 Q. Why not?

11 A. It was a question of documentation of the
12 enrollment that actually occurred.

13 Q. Okay. So, you attempted to identify the actual
14 response of the producers?

15 A. Yes.

16 Q. So, it wasn't necessary to model the response
17 because you --

18 A. Yes.

19 Q. -- you got down into the factual data?

20 A. Yes.

21 Q. Okay. Is that your preferred course when it's
22 available to you?

23 A. Yes.

24 Q. Okay. Turning to page thirty-three, the second
25 sentence of the first full paragraph, I believe,

1 indicates that you stopped short of translating effects
2 into income on employment; is that correct?

3 A. I did not in this do any modeling of income or
4 employment.

5 Q. And is that because, as you stated, no models
6 existed at that time?

7 A. No. I was not asked to go that far in the
8 analysis. I was not asked to build models.

9 Q. Although the third sentence starts, No economic
10 model that would accurately do this presently exists.

11 What did you mean by that?

12 A. Nobody had done any.... Where is this?

13 Q. It's the third sentence of the first full
14 paragraph.

15 A. Oh, okay.

16 MR. DRAPER: And the question is, What did he
17 mean by the third sentence?

18 MR. WILMOTH: What did he mean when he said, No
19 economic model that would accurately do this presently
20 exists.

21 A. Well, I'm simply saying that no one has
22 developed a model specifically focusing on the total
23 value of output attributable to springflows -- changes
24 in springflows. Nobody developed a model based on -- on
25 that dependence on springflow.

1 Q. (BY MR. WILMOTH) But the report derived a
2 total value of output attributable to springflow and
3 changes in flow; is that right?

4 A. No.

5 Q. Okay. What does the first sentence mean then?

6 A. This report really surveys in a non-modeling
7 way many of the economic sectors that depend on
8 springflow. It does not rely on models. It does not --
9 does not attempt to model in a definitive way the -- any
10 curtailment scenario.

11 Q. Did this report develop a value of those
12 springflows to that community?

13 A. Only in a very general sense, and it was
14 focusing on gross outputs, not preferred income measures
15 I would like to use.

16 Q. So, if you have a gross output value --

17 A. (Witness nods head.)

18 Q. -- and you want to translate that value into
19 income or employment effects --

20 A. (Witness nods head.)

21 Q. -- is there currently a model available that
22 would allow you to do so?

23 A. Are you talking about in general or in the
24 context of something?

25 Q. I'm talking about in general.

1 A. There are models available. They depend on the
2 quality of the data that you have to populate such as a
3 model.

4 Q. Can you use IMPLAN to do that?

5 A. Yes.

6 Q. IMPLAN certainly existed in 2004, did it not?

7 A. Yes.

8 Q. So, why did you indicate no such models existed
9 in this paper?

10 A. Because the paper was focusing specifically on
11 the impacts of springflow and changes in springflow, and
12 I stand by the statement, No such model specific to that
13 purpose had been developed at that time.

14 Q. Was IMPLAN developed specifically to analyze
15 the impact of water compact violations?

16 A. Impact -- or IMPLAN is a modeling framework
17 that can be applied in many situations. IMPLAN had not
18 been applied in this particular case to look at the
19 output attributes or to the changes attributable to
20 springflow or changes in springflow. That specific
21 application of IMPLAN had not been done.

22 Q. So, why, in your view, is it appropriate not to
23 apply it in this case, but to apply it in the present
24 case?

25 A. I --

1 Q. The present litigation being Kansas V Nebraska.

2 A. I have not said that it was inappropriate in to
3 -- to apply it in this case. I'm saying it had not been
4 done, and it was not part of my assignment to do so. It
5 could have been done. If someone had paid me to do it,
6 I might have done it.

7 Q. I can't blame you there.

8 A. But I was not asked to do so.

9 Q. Is it fair to say, though, that you were
10 concerned about a novel application of the IMPLAN model?

11 A. No. It would have been a routine application.

12 Q. It would have been?

13 A. Would have been had I -- had I been asked to do
14 it.

15 Q. So, just for clarity, the model existed and you
16 could have applied it?

17 A. The modeling framework existed. Economists
18 tend to distinguish between the modeling framework which
19 can be applied to a problem versus the populated model
20 specific to that problem. IMPLAN is the modeling
21 framework. It has existed for many years and can be
22 applied to specific problems of interest.

23 Q. Do you recall co-authoring a document or an
24 article, I should say, titled Mandates Versus Markets,
25 which is evaluating various changes of hydropower in the

1 Northwest?

2 A. Sounds familiar.

3 Q. Unfortunately, I don't have a copy of the
4 article. Do you have any recollection of its general
5 content?

6 A. I was a very junior author on it, if it's the
7 paper I remember. No.

8 Q. Okay. Do you presently have an opinion about
9 the value of regulatory mandates versus marketing
10 alternatives to solve water conflicts?

11 A. My opinion is that both tools may be
12 appropriate in particular instances.

13 Q. Do you mean that a combination of such tools is
14 appropriate?

15 A. I tend to view them more as alternatives.

16 Q. So, typically they would not operate in
17 conjunction, is that what you're saying?

18 A. Most -- in most cases both tools, both
19 regulatory mechanisms, tend to be intermixed together.
20 It's a question of emphasis.

21 Q. Regulatory tools and market-based tools tend to
22 be commingled?

23 A. They are very often commingled.

24 Q. Do you have an opinion on when it is
25 appropriate to employ one or the other or both?

1 MR. DRAPER: Is your question in context of
2 some purpose trying to be achieved in the --

3 MR. MR. WILMOTH: Just for whatever purpose.

4 A. No.

5 Q. (BY MR. MR. WILMOTH) Just returning very
6 briefly back to the report we were just discussing which
7 we will go ahead and mark as Exhibit 6.

8 EXHIBITS:

9 (Deposition Exhibit No. 6 marked for
10 identification.)

11 Q. (BY MR. WILMOTH) You were explaining to me the
12 difference between the modeling framework and actual
13 usage.

14 A. Yes.

15 Q. What parameters are necessary to populate the
16 modeling framework to analyze the economic impacts of
17 changes in irrigation?

18 A. One needs to know what economic sectors are
19 directly affected by some likely change or proposed
20 change. One needs to know the extent to which they are
21 affected.

22 Q. How are those determined? How are those things
23 determined?

24 A. In our analysis, the extent of the impact was
25 the extent of the direct impact on agriculture from

1 water shortage.

2 Q. And in making that determination, I would like
3 to talk to you about your reliance on the work of
4 Mr. Book. Can you tell me specifically what assumptions
5 or values Mr. Book provided you that formed the basis of
6 your report? And by "report," I'm referring to both
7 Exhibits 3 and 4.

8 A. Well, like are noted --

9 Q. And you're welcome to review your reports --

10 A. -- in the report --

11 Q. -- if you would like.

12 A. -- the Kansas report --

13 Q. This would be, for the record, Exhibit 3?

14 A. Exhibit 3.

15 Q. Thank you.

16 A. -- Kansas report relied on Spronk estimates of
17 the water that should have been available in Kansas in
18 the two years in question. It relied on Spronk
19 estimates of the water that that implied outside of KBID
20 if the required water had been delivered to Kansas.

21 Q. Are you referring to return flows in that
22 content?

23 A. Yes.

24 Q. Thank you.

25 A. I tend to designate them in the report as

1 outside KBID.

2 The Nebraska analysis, and I believe that was

3 No. 4?

4 Q. Yes, sir.

5 A. -- relied on Spronk estimates of the acreage

6 that would have been affected by groundwater

7 curtailment. It relied on estimates from Spronk as to

8 the acreage of land classified as six lands. It relied

9 on estimates from Spronk on the amount of -- the

10 additional amount of surface water which should have

11 been made available to Kansas, and it relies on

12 estimates of storage water that should have been

13 released to Kansas. I think that may be the -- that may

14 be all of the linkages.

15 Q. When you talk about the water that should have

16 been available to Kansas, does that -- is that referred

17 to as the "required water" in your report?

18 A. That is correct.

19 Q. Okay. So, if I understand you correctly, one

20 of the things that you relied on Spronk to provide is

21 the amount of Nebraska's overuse, for example?

22 A. Presumably that was a portion of what Spronk

23 used to derive the numbers which they provided to me.

24 Q. The required water figures?

25 A. Yes.

1 Q. Is that what you're referring to?

2 A. Yes.

3 Q. So, just to be clear then. If Spronk made some
4 calculation error in its determination --

5 A. Excuse me.

6 Q. -- assume for the sake of argument for this
7 question that Spronk made a calculation error and
8 perhaps overstated the volume of required water, would
9 that affect your report?

10 A. If the error affected the figures on required
11 water that I used, yes, it would have affected my
12 analysis.

13 Q. So, is it fair to say that the jumping off
14 point, if you will, for your analysis was the figure
15 provided by Spronk which you refer to as required water?

16 A. Correct.

17 Q. And for the record, if there were an error in
18 that figure, it would have an affect on your
19 conclusions?

20 A. Anything that affects the numbers on required
21 water would affect our analysis.

22 Q. And if I understand you, one of the other
23 things that Spronk provided you was a determination of
24 how much water would have been available to the Kansas
25 Bostwick Irrigation District or KBID; is that correct?

1 MR. DRAPER: You're suggesting something
2 different than what you were just referring to?

3 MR. MR. WILMOTH: No. I'm asking him if I
4 heard him correctly.

5 A. I had thought that was what we were just
6 talking about.

7 Q. (BY MR. WILMOTH) Okay.

8 A. Yes. I believe that's the same thing.

9 Q. Okay. And Spronk also provided you information
10 on the likely return of flows available to the area
11 outside of KBID, correct?

12 A. Yes.

13 Q. So, if there were an error in the calculation
14 of return flows, would that affect your report?

15 A. Yes.

16 Q. For sake of clarity, is the required water to
17 which you refer to in your report, the ten-and-a-half
18 inch allocation that you refer to?

19 A. I don't know the calculations that went into
20 that. I relied on Spronk for the required water
21 numbers.

22 Q. And transitioning away from Spronk, I would
23 like to discuss and understand the general nature and
24 reliance on Dr. Klocke's work, if I'm pronouncing that
25 correctly?

1 A. I believe he pronounces it with a "U" sound

2 rather than....

3 Q. Okay.

4 MR. DRAPER: Klucke (phonetic)?

5 MR. WILMOTH: Klocke.

6 Q. (BY MR. WILMOTH) Can you identify the basic
7 data or assumptions that you obtained from Dr. Klocke on
8 which you relied.

9 A. My reliance on Dr. Klocke was for yield
10 modeling that is to estimate the relationship between
11 water supplies and crop yields.

12 Q. And did you conduct any independent
13 verification of that work?

14 A. No.

15 Q. So, if there were an error in the Klocke
16 conclusions, would that have an affect on your report?

17 A. It could.

18 Q. And finally, did you receive any direction or
19 rely on any input from Mr. Barfield (phonetic)?

20 A. No.

21 Q. Okay. Have you had an occasion to review the
22 work of Kansas's economic experts in the arbitration
23 proceedings?

24 A. Yes.

25 MR. WILMOTH: Why don't we take ten minutes,

1 John?

2 MR. DRAPER: Okay.

3 (Whereupon, the deposition was in recess at
4 3:00 p.m. and subsequently reconvened at 3:10 p.m.; and
5 the following proceedings were had and entered of
6 record:)

7 MR. WILMOTH: All right. Are we ready?

8 DR. HAMILTON: (Witness nods head.)

9 Q. (BY MR. WILMOTH) Before we proceed to discuss
10 Exhibit 3 of your report, I just wanted to ask a point
11 of clarification with regard to Mr. Book's and Spronk's
12 analysis of the losses to Kansas water users. There's a
13 statement in this report --

14 A. Which report?

15 Q. The engineering analysis of the losses to
16 Kansas water from Nebraska overuse.

17 A. Yes.

18 Q. What I call the Book Report No. 1?

19 A. Yes. Yes.

20 Q. Just as a point of clarification, on page six
21 of this report Mr. Book says the amount of acreage
22 irrigated was determined by the economist based on
23 available supply and historical acreage. Can you
24 explain what that means?

25 A. That is a computation which is described in my

1 report and which -- computation which is carried out on
2 Table 6.

3 Q. Are you referring to Exhibit 3, Doctor?

4 A. Three, correct. Tables 5 and 6. Table 5 looks
5 at historic classified cases. Actually irrigated acres
6 and the distribution of those acres above and below
7 Lovewell. Table 6 uses that data to calculate acres
8 that would have been irrigated with the required water
9 supply.

10 Q. Okay. And I'm just trying to understand from
11 -- for our perspective, you provided that information to
12 Mr. Book, or Mr. Book provided that information to you?

13 A. I provided that to Mr. Book.

14 Q. And how did you determine to utilize that
15 information?

16 A. I think I need clarification on that question.

17 Q. Sure. How did you arrive at Table 6?

18 A. The description of how I arrived at Table 6 is
19 in the text of the report.

20 Q. Can you direct me to that text?

21 A. Okay. Yes. Table 2, middle paragraph
22 beginning with Table 5.

23 MR. DRAPER: Just for clarification, I think
24 Dr. Hamilton is referring to page two of the report.

25 MR. WILMOTH: Okay. That would be KS 547?

1 MR. DRAPER: Yes.

2 A. The two smaller paragraphs describe the
3 computations.

4 Q. (BY MR. WILMOTH) Okay. So, were you
5 responsible for selecting the period 1994 through 2000
6 as a representative period of normal, or was Mr. Book
7 responsible for that?

8 A. I was responsible for that.

9 Q. And were you responsible for determining the
10 distribution above and below Lovewell, or was Mr. Book
11 responsible for that?

12 A. I did that myself based on the historic
13 distribution. It was my computation.

14 Q. And with regard to Table 6, you determined the
15 classified acreage and that it was appropriate to use
16 the eighty-nine point one percent figure?

17 A. The classified acreage numbers were taken from
18 the KBID reported numbers in Table 5.

19 Q. By you, though? You took those numbers and
20 applied them?

21 A. Yeah.

22 Q. Okay.

23 A. I used KBID's reported numbers.

24 Q. Okay.

25 A. And the eighty-nine point one number was my --

1 was my number.

2 Q. Okay. And then what was your purpose for

3 developing these figures to give to Mr. Book?

4 A. We needed to do -- I needed these numbers

5 myself in my analysis to identify the acreage that

6 should have been irrigated if the required water had

7 been available. And Mr. Book needed these numbers in

8 order to go from the acre feet of required water to --

9 to impacts per acre.

10 Q. Okay. Let me make sure I understand. Is it

11 fair to say, then, that you calculated a total, and then

12 he backed that out into a per acre statistic?

13 A. Yes.

14 Q. Okay. And the process by which you went about

15 calculating the total is reflected in the text that you

16 were citing?

17 A. The text referring to Tables 5 and 6.

18 Q. Okay. I think I understand that relationship.

19 I'll have some questions about that in a moment.

20 A. Yes.

21 Q. Thank you.

22 Okay. Let's turn to Exhibit 3 then, and what I

23 tend to do is just walk through a report hopefully at

24 least fairly linearly and address some of the statements

25 and conclusions drawn.

1 Before I get too far into the report, though,
2 can you just give me a sense of which portions of the
3 report you authored and which portions of the report Dr.
4 Robison authored?

5 A. The direct impact sections are almost totally
6 mine. The secondary impact discussion is mostly Hank's.
7 The last few sections which bring it all together are
8 collaborative between the two of us.

9 Q. So, did Dr. Robison actually author text or
10 just run the IMPLAN model?

11 A. He authored text.

12 Q. In the secondary --

13 A. Yes.

14 Q. -- impact analysis?

15 A. Yes.

16 Q. Okay.

17 A. And we collaborated on the text in the
18 secondary impact section.

19 Q. So, would it be appropriate to direct questions
20 to you about the secondary impact analysis, or would you
21 defer to Mr. -- Dr. Robison about that?

22 A. Some of the general questions about what was
23 done, it would be appropriate to ask me. Specific
24 questions as to how some of the calculations were done,
25 and also some of the specific questions about input

1 methodology, Hank is more qualified to answer than I.

2 Q. All right. Thank you.

3 On the first page of KS 544, actually the very
4 first sentence of the report --

5 A. (Witness complies.)

6 Q. -- you explain, This report describes the
7 economic analysis of Kansas's losses resulting from
8 Nebraska's overuse of Republican River water in the two
9 years identified.

10 A. Yes.

11 Q. To whom did you speak with in Kansas about
12 those losses?

13 A. Well, we spoke to Kenny Nelson of the KBID. We
14 spoke -- spoke to several other groups of farmers and
15 others during several tours of the region. Spoke to
16 Scott Ross who is director of the -- I'm not sure
17 exactly what his title is -- involved with the water
18 agency for the region.

19 Q. What kind of information did you obtain from
20 those folks?

21 A. From the director of KBID, we obtained copies
22 of historic KBID annual reports, considerable amount of
23 anecdotal information about what had gone on over the
24 years. Who -- Scott Ross is also a fund of knowledge of
25 the original water situation as are some of the farmers.

1 Q. With regard to these farmers, are you referring
2 to the farmers within KBID or outside of KBID or both?

3 A. Farmers within KBID were the ones that I talked
4 to.

5 Q. Did you speak to any farmers outside of KBID?

6 A. Some of the farmers within KBID also have
7 operations that extend outside KBID.

8 Q. And did Mr. Nelson ever have an opportunity to
9 review your final product?

10 A. Not that I'm aware of.

11 Q. What did Mr. Nelson tell you about the nature
12 of the losses in 2005 and '06?

13 A. Basically described what happened. He
14 corroborated the picture that one gets from the annual
15 reports. Described that the KBID was substantially
16 impacted by the water shortages, the organization of
17 KBID itself. That is, during the water shortages, it
18 instituted a differential fee structure. That fully
19 supplied users paid more than those who didn't get any
20 water.

21 Q. You mentioned the annual reports for KBID. Did
22 you review the reports for '05 and '06?

23 A. Yes.

24 Q. Do you recall what those reports show as far as
25 corn yields in '05, for example?

1 A. Corn yields were actually fairly good.

2 Q. Were they then the existing record perhaps?

3 A. I can't say about records, but they were --

4 they were fairly good.

5 Q. Do you recall the precipitation patterns in

6 2005, as reflected in the reports in 2005, as reflected

7 in those reports?

8 A. No, not clearly.

9 Q. Did you factor into your analysis those

10 precipitation patterns?

11 A. Not directly.

12 Q. Did Mr. Nelson --

13 A. Not into Kansas's analysis.

14 Q. Did Mr. Nelson tell you that their district's O

15 and M charges under their reclamation contract had been

16 deferred in those years?

17 A. I don't believe I remember him discussing that.

18 Q. Were you aware of that fact?

19 A. No.

20 Q. Did you consider whether -- or did you learn

21 from Mr. Nelson that the district had received drought

22 assistance payments in 2005 and '06?

23 A. No.

24 Q. Now, a little bit further down in the report

25 with regard to Spronk's work, I'm a little bit unclear,

1 but I think I understand that Spronk developed and
2 identified the volume of so-called overuse by Nebraska;
3 is that right?

4 A. Yes.

5 Q. Okay.

6 A. What I was provided with was the additional
7 required water. As to whether that's the same thing as
8 "overuse," I'm not sure.

9 Q. How would you define the required water then?

10 A. The required water was the water that should
11 have been delivered to KBID.

12 Q. Because of the compact?

13 A. (No response made.)

14 Q. In other words, what I'm trying to determine
15 is, did the required water get defined by you by looking
16 at what could have been irrigated, or did it get defined
17 by Mr. Book by looking at what Nebraska over used?

18 A. It was -- it was -- the required water was
19 defined by Mr. Book.

20 Q. Okay. All right.

21 So, returning to a theme that we spoke of
22 earlier, you may or may not be aware of a dispute among
23 the states about allocating evaporation from Harlan
24 County Lake.

25 A. I'm aware that there is a dispute.

1 Q. About allocating evaporation losses from Harlan
2 County Lake?

3 A. (No response made.)

4 Q. Assuming for the next -- the sake of my next
5 question, that if Nebraska where to prevail in that view
6 and the number that Mr. Book gave you was revised
7 downward by, say, eight thousand acre feet, would that
8 have a linear effect on your conclusions? In other
9 words, would your ultimate conclusions just be reduced
10 proportionately?

11 A. I'm not certain that it would necessarily be
12 linear. It might be close to that. It -- it would be a
13 number that would have to work its way through my link
14 spreadsheets and there's a few curvilinear relationships
15 in there.

16 Q. Okay. And if the figure were revised to, say,
17 thirty thousand acre feet roughly, would that have an
18 impact on your conclusions?

19 MR. DRAPER: The thirty thousand compared to --

20 MR. WILMOTH: Compared to what Mr. Book
21 provided him.

22 A. If the required water number were changed, it
23 would change my results.

24 Q. (BY MR. WILMOTH) Okay. If I understand your
25 reliance on Dr. Klocke's work, he provided the crop

1 production functions?

2 A. Correct. They're the crop yield functions.

3 Q. Excuse me, crop yield functions.

4 Did you conduct any work to validate those, or
5 did you just accept those from Dr. Klocke.

6 A. I did not conduct any validation work.

7 Q. Do you recall what his yield curve looked like.

8 A. It was curvilinear.

9 Q. Do you recall what the maximum yield looked
10 like? What number it was?

11 A. The numbers are tabled in a table in the
12 report. I do not specifically recall them.

13 Q. Okay. And will you locate that table?

14 A. Table 13.

15 Q. Okay. So, what is the yield for center pivot
16 corn in this case?

17 A. The maximum yield shown on Table 13 center
18 pivot corn is a hundred and eighty-two bushels.

19 Q. And if the annual reports from KBID indicate
20 that the yield in 2005 was a hundred and eighty-seven
21 bushels, what would that tell you about Dr. Klocke's
22 analysis?

23 A. It would indicate that the.....it would
24 indicate that Dr. Klocke's analysis is based on some
25 averages, and in this particular case, yields were

1 really good. Yields depend on a range of things.

2 Q. Specifically in 2005 what would that mean with
3 regard to the need for additional water on those acres?

4 A. It would indicate that operating -- they were
5 operating relatively close to the top of the yield
6 curve. It does not necessarily indicate that additional
7 water would not have produced further yield increases.

8 Q. So, if additional water application would have
9 produced further yield increases, isn't Dr. Klocke's
10 work erroneous?

11 A. No.

12 Q. Why not?

13 A. Dr. Klocke's work is based on general
14 relationships between yield and water. There may be
15 variations around it. The methodology used by Dr.
16 Klocke generally talks about yield response to water and
17 yield differences associated with water, so, that in
18 2005 there may have been other factors.

19 Q. Such as?

20 A. Temperature, the actual distribution of water
21 through time, lack of insects, other things. It turned
22 out to be a good year. That does not necessarily mean
23 that with additional water there couldn't have been an
24 additional increment of yield.

25 Q. Do you have any idea what that increment could

1 be?

2 A. Our estimates of yields in these situations are
3 tabulated in a table in our report, and one can infer
4 the yield increments that are approved by looking at
5 differences between the estimated yields.

6 Q. So, what do you think the yield could have been
7 in 2005 over and above a hundred and eighty-seven
8 bushels?

9 MR. DRAPER: Above a hundred and eighty-seven
10 bushels?

11 MR. WILMOTH: (Counsel nods head.)

12 A. That would take some additional calculation
13 here.

14 Q. (BY MR. WILMOTH) It's not reflected in this
15 report?

16 A. No, it's not.

17 Q. Okay. A little further down on your report on
18 the same page, you indicate that the section entitled
19 On-Farm Direct Effects in KBID.

20 A. Okay. I'm sorry. Where are you?

21 Q. The section entitled On-Farm Direct Effects in
22 KBID.

23 A. Okay.

24 Q. It's my understanding that this section
25 determines the on-farm direct economic effects suffered

1 by Kansas farmers in 2005 and 2006; is that right?

2 A. Right.

3 Q. And I understand you spoke with Mr. Nelson and
4 Mr. Ross and some additional farmers in Kansas about
5 this. How many interviews did you conduct with those
6 farmers?

7 A. We talked with seven or eight farmers.

8 Q. Seven or eight --

9 A. Yeah.

10 Q. -- in KBID?

11 A. Yes.

12 Q. But some of those owned lands outside of KBID?

13 A. Yes.

14 Q. And what did they tell you about corn yields,
15 for example, in 2005?

16 A. I don't remember that they directly addressed
17 that issue.

18 Q. What did they tell you about precipitation
19 patterns in 2005?

20 A. I don't remember that they directly addressed
21 that issue.

22 Q. So, how does your calculation of the on-farm
23 direct effects in KBID relate to what you heard from
24 those individuals?

25 A. We were interested in what they chose to do.

1 Of course, many of them, especially above the KBID area,
2 indicated that they didn't get any water. They had to
3 grow dryland crops, thus the -- they had to grow dryland
4 crops.

5 Q. Let's talk about that specific issue.

6 A. (Witness nods head.)

7 Q. If a farmer above Lovewell grows dryland crops,
8 then do they avoid the cost of irrigation water?

9 A. They still had to pay a reduced assessment.

10 Q. But they don't pay the full freight on the
11 irrigation water, correct?

12 A. Not the full....

13 Q. Do they have any other relative input
14 advantages compared to an irrigator?

15 A. They would tend to -- if they would tend to use
16 less in some inputs, obviously they would not use any
17 energy for an irrigation application system which
18 wouldn't be used in that case. Some changes perhaps in
19 tillage costs. Yes. There would be costs that would be
20 avoided.

21 Q. And when do those farmers typically make that
22 decision? Did they inform you of that?

23 A. Some decisions, like a decision to buy
24 fertilizer, a decision as to what variety of corn to buy
25 and so on, could be made fairly early. So that farmers

1 who, then, found themselves without water might have
2 some problems with agreements that they entered into
3 earlier. In our analysis, we -- we did not take that
4 into account. We assumed that farmers that went to
5 dryland crops pretty much followed the practices of
6 dryland producers. If they already had entered into
7 contracts for fertilizer buying and seed buying and so
8 on, they might have had some costs -- costs which we
9 didn't recognize.

10 Q. Did you conduct any analysis to determine the
11 relative net profit of dryland farmers versus irrigators
12 in KBID in 2005 or '06?

13 A. The relative profit or income relative to
14 spending are numbers that are in the budgets that we
15 display in our report.

16 Q. So, can you tell me, for example, what the net
17 profit was for a dryland farmer above Lovewell in 2005?

18 A. Not in that way. I can -- I can tell you what
19 the relative net profit for an acre of corn was or an
20 acre of soybeans was.

21 Q. But you can't distinguish -- or excuse me, you
22 have not distinguished in your report the difference
23 between the net profit attributable to dryland farmers
24 or irrigators?

25 A. We do, in the report, calculate net returns to

1 farmers with dryland and to farmers with the actual
2 amount of water that they got and farmers with the
3 amount of water that they should have gotten. And the
4 differences then become the impact of the water shortage
5 on incomes.

6 Q. So....

7 A. They are not -- they are not parameterized
8 based on per farm. They are parameterized per acre.
9 And then we add these impacts to KBID, above KBID and
10 below level.

11 Q. Let me ask it in layperson's terms, if I can
12 try.

13 Can you tell me whether a particular dryland
14 farmer in KBID had a greater or lesser net return than a
15 particular irrigator in KBID in 2005?

16 A. I have not done so.

17 Q. Thank you. Getting back to this page, the
18 first page, five forty-six, KS 546, you identified a
19 need to calculate the actual costs and returns for these
20 farmers in these two years. How did you derive those
21 actual costs and returns?

22 A. They are estimated based on cost and return
23 budgets.

24 Q. So, you didn't get that information from any of
25 your interviews?

1 A. No.

2 Q. How are they estimated and who conducted that
3 estimation?

4 A. The estimates are based on crop budgets which
5 are developed by the extension service at Kansas State
6 University.

7 Q. Okay. So, the term "actual" in this context is
8 a bit of a misnomer?

9 A. Yes.

10 Q. Okay. In the heading -- under the heading KBID
11 Irrigated Crop Acreage History, same page, the last
12 sentence there indicates that Nebraska essentially
13 caused irrigated acreage reductions in KBID; is that
14 correct?

15 A. Yes.

16 Q. And I understand that you conducted no analysis
17 to make the determination about causation, right?

18 A. Correct.

19 Q. Let me turn to page five forty-seven here. You
20 note that the percentage of land devoted to milo and
21 alfalfa increased in water-short years?

22 A. Where is that?

23 Q. That would be....

24 A. Right up at the very top of the page?

25 Q. Yeah. Right up at the top.

1 To what do you attribute that increase?

2 A. Milo and alfalfa are crops that are more
3 forgiving if, in fact, they have to be shorted on water.

4 Q. Why do you think that increase would occur if
5 corn yields were as strong as they have been in the
6 district?

7 A. I would say there was a fear that there would
8 be lack of irrigation water.

9 Q. A little further down, first sentence of the
10 next paragraph, you indicate that your analysis requires
11 determining the irrigated crops Kansas would have grown
12 if the required supply had been available. Do you see
13 that?

14 A. You'll have to direct me.

15 Q. The first sentence of the second paragraph.

16 A. Ah, yes.

17 Q. Why not use the actual crop mix in those years?

18 A. Because the crop mix in those years was
19 impacted by the fact that water was short, and the -- in
20 both of those years, the acreage that was actually
21 irrigated was -- was restricted. A lot of land was not
22 cropped. So, there were basically forces including,
23 frankly, I think, uncertainty as to what the water
24 supply would be that caused crops other than water
25 intensive corn to be grown. Risk avoidance.

1 Q. Okay. So, that means, if I understand it, that
2 these folks were making decisions based on a risk
3 tolerance threshold --

4 A. Yes.

5 Q. -- as to what to plant in '05 and '06?

6 A. Yes.

7 Q. Now speaking about this issue of water-short
8 conditions, if I understand correctly, you concluded --
9 and this is your work, not Mr. Book's -- you concluded
10 that the years '91 through '93, 2001 through 2004, and
11 2007 through 2009 were water short and, therefore, not
12 representative of the conditions in '05 and '06; is that
13 right?

14 A. The -- the original designation which I
15 received for what years were water short and what were
16 not, I believe I was at the very beginning of my
17 analysis provided with that by Spronk. I believe that
18 this is actually the same designation of water-short
19 years that was used by the head KSU team in their
20 analysis for the non-binding arbitration.

21 Q. So, Spronk tells you that those years are not
22 representative of --

23 A. No. Spronk said that those were -- the
24 particular identified years were water-short years.

25 Q. Okay. And then you decided you didn't want to

1 use water-short years. You wanted to use '94 through
2 2000 as representative of what would have happened in
3 2005 and 2006; is that right?

4 A. I'm hesitating because I'm not sure I agreed
5 with that, with the years that you stated in your
6 question. You may need to repeat that.

7 Q. Let me try this way. What years did you
8 conclude were properly representative of the 2005 and
9 2006 condition that you wanted to replicate?

10 A. Okay. Yeah. '94 through 2000 years where the
11 water supply was sufficient that enough -- that the year
12 did not begin with water-supply restrictions. So, I
13 stand by the sentence as it appears in the -- and that
14 was my....

15 Q. So....

16 A. my judgment.

17 Q. Okay. So, getting back to these water-short
18 years --

19 A. Yes.

20 Q. -- that you did not elect to use, did you take
21 into consideration the magnitude of the restrictions in
22 those years?

23 A. No.

24 Q. Do you know what the causes of the restrictions
25 were in those years?

1 A. No.

2 Q. Do you have a basis for assuming there wouldn't
3 be any water supply restrictions in '05 and '06 but for
4 Nebraska's overuse?

5 A. No.

6 Q. And within that set of years, there were
7 restrictions imposed, but there was no Nebraska overuse,
8 correct?

9 A. That, I don't know.

10 Q. Okay. Do you know the year in which KBID's
11 record corn yield occurred?

12 A. Again?

13 Q. Do you know the year in which KBID experienced
14 its record corn yield?

15 A. No, I do not.

16 Q. If I told you it was 2009, for purposes of this
17 discussion, how would you explain that?

18 A. I assume it was a good year. Corn yields have
19 been trending upward nationwide. Improved varieties,
20 improved practices, BT seed. Corn yields are trending
21 upward.

22 Q. So, assuming that 2009 was the record corn year
23 and 2009 was a water-short year or a restricted year, as
24 you identified it, does that mean that these
25 restrictions have no bearing on yield?

1 A. I can't say much about 2009. One needs to bear
2 in mind that KBID corn yields -- reported corn yields
3 are KBID -- are the yields based on the acres actually
4 irrigated. In years in which there is a water shortage
5 such that it restricts acreage, the reported yields are
6 based on that restricted acreage. And a rational farmer
7 faced with restricted acreage grows his corn on his best
8 land, and that selection of the best land in water-short
9 years may go a long way towards explaining good yields
10 in water-short years.

11 Q. You note that the first step in this process is
12 calculating how much land would have been irrigated in
13 2005 and 2006 if the required supply had been available.

14 A. Yes.

15 Q. Can you describe why you chose the 1994 to 2000
16 period to develop that calculation?

17 A. Because those were years with -- that did not
18 begin with water supply restrictions, so presumably the
19 -- the portion of qualified land -- I forget what
20 exactly the KBID designation of it is -- but the portion
21 of available land that was actually irrigated would --
22 would be typical of a -- of a non-shortage year.

23 Q. And if I understand correctly, you determined
24 that based on that period, eighty-nine percent, roughly,
25 of the land that's irrigable would have been irrigated?

1 A. Yes.

2 Q. Do you have any idea how that figure relates
3 to, say, the long-term average over all years?

4 A. It's visible in the table. Okay. The Table 5
5 classified acres which is land determined by KBID being
6 eligible to receive acres -- to receive water. They
7 have been relatively stable through time. Very, very
8 slight trends. Very slight. Actually irrigated acres
9 has vacillated depending on the -- mainly, one assumes,
10 on the quality of the water supply.

11 Q. And my question again is, do you have any sense
12 as to the long-term average of the amount of ground
13 that's irrigated relative to the irrigable ground within
14 the district?

15 A. Uh....

16 Q. If I said it was seventy-four percent, would
17 you have any reason to quibble with that?

18 A. I would just have to accept that subject to
19 check, I guess.

20 Q. Assuming for the sake of --

21 A. I may have calculated it at one time, but I
22 have forgotten.

23 Q. Assuming, for the purpose of this question,
24 that if it were seventy-four percent and that figure
25 were applied instead of eighty-nine percent, how would

1 that affect your ultimate conclusions?

2 A. It would reduce the amount. It would reduce
3 the acres that should have been irrigated. It would, of
4 course, as it links through Spronk's analysis have
5 increased the per acre water allocation that should have
6 been delivered.

7 Q. Now you selected, if I understand correctly,
8 2010 as the year to represent the crop mix that would
9 have been planted in '05 and '06; is that correct?

10 A. Yes.

11 Q. Why not use the same '94 to 2000 period?

12 A. I would have preferred to use the same years.
13 It would have avoided you asking this question.

14 Q. That's fair enough.

15 A. However, I felt that I could not in spite of
16 that incentive because the crop mix had been changing
17 substantially through time. The strong dominance of
18 corn had been diminishing. And basically I didn't want
19 to use the water-short years because I felt that the
20 crop mix was skewed by that water shortage and that
21 really left the only really available year 2010.

22 Q. So, if the crop mix was in flux from '92 to
23 2010, are you suggesting that that flux has ended now in
24 2010?

25 A. I'm suggesting that 2010 is more representative

1 of the -- of the two years we are talking about, '05 and
2 '06, than the early years. I attribute a fair amount of
3 the change in crop mix to larger economic changes rather
4 than just water-shortage condition in the district.
5 Farm economy has changed a lot in recent years. There's
6 no indication it's not going to change more. But 2010,
7 in my view, was more representative of what we could
8 have expected in '05 and '06?

9 Q. I'm having a hard time reconciling those
10 statements. If the economy has changed significantly in
11 the last few years and 2010 represents the culmination
12 of that change, why is it, in your view, appropriate to
13 retroactively ignore those changes and act as though '05
14 and '06 as it were in 2010

15 A. I refer you back to the two figures that I have
16 in the report. And they occur between Tables 4 and
17 Tables 5. And as you observe in the two figures, the
18 crop mix in the years since '05 and '06 has been
19 relatively stable. The dots are relatively stable as
20 compared to the substantial changes that occurred in the
21 earlier years. So, it's that stability in the years
22 since '05 and '06 that I used as justification.

23 Q. Is this flux that you referred to associated
24 with water-short years?

25 A. I think it's more attributable to larger

1 economic --

2 Q. Economic conditions?

3 A. -- conditions.

4 Q. What's the effect in your analysis of choosing

5 2010 instead of the average crop mix, say, from '94 to

6 2000?

7 A. I don't know. It could be determined, but I

8 have not estimated that.

9 MR. WILMOTH: All right. Let's just take ten

10 minutes.

11 MR. DRAPER: Okay.

12 (Whereupon, the deposition was in recess at

13 4:00 p.m. and subsequently reconvened at 4:15 p.m.; and

14 the following proceedings were had and entered of

15 record:)

16 MR. WILMOTH: Ready to resume?

17 DR. HAMILTON: Yes.

18 Q. (BY MR. WILMOTH) All right. Thank you,

19 Doctor.

20 Before we leave the crop mix question, I just

21 wanted to ask generally what factors generally influence

22 crop mix?

23 A. Crop mix on irrigated land tends to be

24 influenced by market conditions, by rotational needs,

25 influenced by crop responsiveness to water. If you're

1 going to irrigate a crop, you want a crop that responds
2 well to water and other things.

3 Q. Do you have a sense for how those factors in
4 2010 related to the same factors in twenty -- in 2005
5 and 2006 or is the selection of 2010 solely based on the
6 fact that it's not a so-called water-short year?

7 A. Well, the selection is based on the fact that
8 it's not a water-short year. It's based on the fact
9 that the crop mix, as represented by the two figures, is
10 relatively stable since that time period.

11 Q. But you didn't conduct any determination of how
12 those factors --

13 A. No.

14 Q. -- you referenced --

15 A. No.

16 Q. -- between --

17 A. No.

18 Q. -- between 2010 and 2005 and '06?

19 I would like to turn your attention to five
20 forty-eight under your prevented planting heading.

21 A. Page three or KS 548, sir?

22 Q. Page three.

23 A. It's five forty-six, isn't it?

24 Q. Mine shows 548.

25 A. Okay. I see. I see.

1 Q. Okay. I'm referring your attention to a
2 section entitled Prevented Planting in KBID.

3 A. Yes.

4 Q. You indicate in 2005 and 2006 certain farmers
5 were forced to switch to non-irrigation alternatives; is
6 that correct?

7 A. Correct.

8 Q. Are you aware in 2005 and 2006 KBID elected to
9 leave water in storage in Harlan County Lake?

10 A. No. That would have been under the
11 calculations that Spronk did in providing me the
12 numbers.

13 Q. If that were true, how would that influence
14 your opinion about farmers' behaviors?

15 A. I have not thought that through.

16 Q. Are you aware that in 2006 some KBID farmers
17 elected not to take water otherwise available to them?

18 A. No.

19 Q. Would that affect your assumptions about their
20 behavior if that fact were true?

21 A. There have always been farmers who are eligible
22 and have qualified land that do not take water. The
23 actual irrigated is less than the qualified.

24 Q. So, those would not have been forced to
25 non-irrigation. They might have voluntarily elected to

1 do so; is that correct?

2 A. Possible.

3 Q. Did you make any attempt to determine the
4 extent to which people might have voluntarily elected
5 not to take irrigation water?

6 A. No.

7 Q. Am I correct in understanding that you assumed
8 that everyone in the district would have taken water if
9 it had been available?

10 A. I don't think that follows.

11 Q. We will circle back on that.

12 Just as a point of clarification, it appears to
13 me that all of the prevented planting payments in '05 in
14 Jewell and Republic Counties were attributed to farmers
15 in KBID; is that true?

16 A. That's how we attributed that.

17 Q. Was any attempt made to determine the extent to
18 which those payments might not to be made by KBID, or
19 was that a generalized assumption?

20 A. It was a generalized assumption based on the
21 fact that this was the water district within these
22 counties. In order for the prevented planting payment
23 to apply, it had to be a situation in which all farmers
24 in all areas were deprived of water which supplies the
25 water district.

1 Q. So, if a prevented planting payment participant
2 receives a payment, that individual is not paying full
3 freight on the irrigation water, correct?

4 A. Correct.

5 Q. And that person is allowed to grow a dryland
6 non-program crop; is that right?

7 A. They are allowed to grow a cover crop which my
8 understanding is it cannot be harvested or grazed prior
9 to November 1st which perhaps may reduce its value below
10 what I conservatively estimated in my analysis.

11 Q. Earlier we talked about comparing the relative
12 net return from irrigated and dryland farmers?

13 A. Yes.

14 Q. Did you make any effort to determine the net
15 return for those participating in prevented planting who
16 also planted a cover crop?

17 A. If any planted a cover crop, and if my
18 assumption of the nature of that cover crop is correct,
19 they did fairly well.

20 Q. Do you have any sense as to what this net
21 return might have been?

22 A. I estimated in the crop budgets in the report.

23 Q. Can you tell me what that would have been?

24 A. Look at Table 23 in the report.

25 Q. (Counsel complies.)

1 A. In the -- in 2005 if they had prevented
2 planting and just fallowed the land, I value added the
3 income of a hundred and twenty-six dollars per acre.

4 Q. Is this in the prevented planting with fallow
5 column at the very bottom, the value added per acre --
6 dollars per acre, excuse me?

7 A. Yes. Which I believe compares quite favorably
8 with the dryland crops.

9 Q. And how does that compare to irrigated crops?

10 A. Similar.

11 Q. You mentioned, getting back to page five
12 forty-eight, that there's no KBID-specific data on
13 dryland crops actually grown on KBID land; is that
14 right?

15 A. Yes.

16 Q. What do you base that conclusion on?

17 A. Because the annual KBID reports are based only
18 on irrigated land, only on the acres that were actually
19 irrigated.

20 Q. Did you request this information from KBID?

21 A. We talked about that information, and we were
22 told that information on dryland crops was not collected
23 by the district.

24 Q. Nelson told you that?

25 A. Yes.

1 Q. If you could obtain that data, the actual data,
2 would you use it?

3 A. I think so.

4 Q. How would you use that?

5 A. I would have used it to represent the crop mix
6 for dryland actually -- actually grown --

7 Q. In --

8 A. -- in KBID in '05 and '06 if I had specific
9 dryland crop data.

10 Q. In the absence of that data, you felt the NASS
11 data to be the best source?

12 A. Yes.

13 Q. Why is that, in your perception, the NASS data
14 the best source?

15 A. It's widely accepted. It's selected by
16 consistent methodology over the years by the US
17 Department of Agriculture National Agricultural
18 Statistics Service uses survey methods to collect data
19 on agricultural production by county across the entire
20 United States. It's data that's widely used for
21 purposes such as this.

22 Q. Did you assume that the county level NASS
23 dryland crop data was representative of those dryland
24 borders and the KBID borders?

25 A. Specifically that is assumed.

1 Q. Do you have a basis for that assumption?

2 A. I did not have any counter information.

3 Q. I would like to refer your attention to Table

4 10.

5 A. (Witness complies.)

6 Q. Can you just generally tell me what this table

7 depicts?

8 A. The table calculates the acreage of dryland

9 crops that should have -- or that we determined would

10 have been grown in KBID. That we determined were grown

11 in KBID in the '05 and '06 years.

12 The calculation starts with the total acres

13 that would have been grown if the required water had

14 been available. We subtract acres that were actually

15 irrigated in those years which gives the acres that had

16 to go to some kind of dryland alternative. We subtract

17 the determined acres of prevented planting which gives

18 the total acres of dryland crops which were then

19 allocated according to the Jewell and Republic County

20 crop mix.

21 Q. So, let me focus your attention on 2005, the

22 below Lovewell.

23 A. Yes.

24 Q. If I understand this, you note that

25 twenty-three thousand four hundred thirty-nine acres are

1 actually irrigated, but those are irrigated at a reduced
2 rate?

3 A. Yes.

4 Q. Do you know why they were irrigated at a
5 reduced rate?

6 A. Because they did not receive the required
7 amount of water.

8 Q. And you base that on Mr. Book's work?

9 A. Correct.

10 Q. And you did not consider the effect of the
11 precipitation patterns in that year on the application
12 of irrigation water; is that correct?

13 A. That is correct.

14 Q. If I told you that the actual precipitation
15 received during the irrigation season 2005 was, say, a
16 hundred and fifty percent of average, would that affect
17 your view as to why the acreage wasn't irrigated?

18 A. No.

19 Q. So, does that mean that the precipitation
20 patterns are irrelevant?

21 A. One -- precipitation in general during the crop
22 year occurs after the decision is made as to what the
23 allocation of crops are going to be and after a decision
24 was made as to whether or not they are going to engage
25 in irrigation. It depends on the time pattern of that

1 hypothesized hundred and fifty percent.

2 Q. Let's say it was received in June, July, and
3 August.

4 A. That is, of course, after a decision is made as
5 to what crops to grow and after a decision was made to
6 -- at least to begin to engage in irrigation.

7 Q. Doesn't that affect the decision during the
8 irrigation season as well?

9 A. It can affect that.

10 Q. As to how much water is to be applied?

11 A. Correct.

12 Q. And continuing on in this same section....

13 A. Do you have a page number.

14 Q. It's five forty-eight and five forty-nine and
15 really the table that we were just referring to all --
16 all collectively. You note the two thousand nine acres
17 below Lovewell had to switch to dryland alternatives
18 because of the water shortage; is that right?

19 A. Uh-huh, yes.

20 MR. DRAPER: What year was that that you asked
21 about?

22 MR. WILMOTH: I'm talking about 2005, I
23 believe.

24 MR. DRAPER: Okay.

25 MR. WILMOTH: But I'm using the table.

1 MR. DRAPER: I thought I heard a different
2 year; I wanted to be clear.

3 A. Yes. Some -- some acreage had to switch to
4 dryland, yes.

5 Q. (BY MR. WILMOTH) And did you conduct any
6 analysis to determine that the water shortage was the
7 cause of that switch or was that assumed?

8 A. Well, that was my implicit assumption.

9 Q. And the same thing with the acreage above
10 Lovewell?

11 A. Yes.

12 Q. Now, in discussing Table 9 -- and I'm sorry,
13 but I'm referring to the text on page three and Table 9
14 -- you note that spring wheat is an important crop in
15 KBID?

16 A. Yes.

17 Q. Did you mean winter wheat or spring wheat?

18 A. Which part of the text are you referring to?

19 Q. This is on page five forty-nine.

20 A. Uh-huh. Where?

21 Q. You're discussing Table 9, but you're providing
22 some narrative here.

23 A. Yes. And I believe in the paragraph at the top
24 of page four, we are talking about Table 9 includes
25 percentage of land devoted to wheat, is that the area

1 you're talking about?

2 Q. Right.

3 A. And you have mentioned KBID farmers, there's
4 very, very little wheat grown under irrigation on KBID.

5 Q. Okay.

6 A. So, I was -- I was confused by your earlier
7 questions. Can you reframe your question?

8 Q. Sure.

9 Well, you indicate that spring wheat is an
10 important crop in Kansas; is that right? I'm just
11 looking at the first full paragraph on page five four
12 nine.

13 A. The paragraph there I believe contains an
14 error.

15 Q. As to spring wheat?

16 A. Yes. The error is, of course that -- however,
17 the wheat grown in Kansas, it says, is spring wheat
18 which is planted in the fall. That's an oxymoron.

19 Q. So, how would you --

20 A. My correction of the paragraph would be to say
21 that the wheat grown in Kansas is winter wheat planted
22 in the fall. By the time the farmers know that they are
23 going to have a water shortage, presumably the wheat --
24 any wheat would already be planted. But keep in mind
25 there's very, very little wheat ever grown under

1 irrigation in KBID. But -- so there's -- by the time
2 farmers know they are short of water in KBID, it's too
3 late for them to plant winter wheat. So, I wouldn't
4 expect there to be much winter wheat amongst this
5 dryland crop mix either.

6 Have I confused you?

7 Q. I'm just trying to understand how that relates
8 to your prior testimony about the assumption of the
9 behavior of KBID farmers had they known a full supply of
10 water was going to be available in, say, '05. I thought
11 I understood you to say that they make their decisions
12 in the fall of '04 as to how --

13 A. They --

14 Q. -- develop the crop mix.

15 A. They make some decisions in the fall of '04,
16 but they don't know -- they are not told about their
17 likely supply of water until later. I forget the exact
18 dates under which they are told.

19 But typically farmers are going to have to make
20 some decisions like how much fertilizer are they going
21 to buy and what kind of seed types they are going to buy
22 and so on prior to the time they actually know whether
23 it's going to be a water-short year. Likewise, you
24 know, if they were -- you know, by the time it becomes
25 obvious it's going to be a water-short year, it's too

1 late to plant spring wheat -- to late to plant winter
2 wheat on the land which is going to have to be dryland.
3 Therefore, they are going to have to plant dryland corn
4 or dryland beans or dryland milo, but not dryland winter
5 wheat.

6 Q. You suggest that these farmers don't learn of
7 the water supply until sometime late in the year?

8 A. Yes.

9 Q. What do you base that opinion on?

10 A. There is, in fact, a formal -- a formal
11 agreement involving the KBID and the Bureau of
12 Reclamation that specified those dates, and I -- I have
13 not memorized those dates.

14 Q. Did you speak with anyone, particularly Kenny
15 Nelson, in KBID about the frequency with which they
16 communicate water supply issues to their farmers?

17 A. Yes.

18 Q. Do they tell you that they tend to keep their
19 farmers pretty well abreast of water supply?

20 A. Yes. As they learn information, they
21 communicate it.

22 Q. As early as when?

23 A. I can't tell you those dates.

24 Q. Okay.

25 A. But there are specific dates.

1 Q. Do you have an opinion as to the date by which
2 farmers would need to know what the water supply is in
3 order to make informed decisions?

4 A. I'm tempted to answer the earlier the better.
5 The later the decision is made, the less flexibility it
6 gives them in responding properly and the more decisions
7 they may have made -- may have had to make which involve
8 costs and reduce the flexibility.

9 Q. But there's no date certain by which all is
10 lost and no further decisions can be made?

11 A. No.

12 Q. Dr. Hamilton, I'm going to give you a document
13 that we obtained from KBID and just ask if you ever
14 looked at a document like this in the course of your
15 work for this case?

16 A. No, I have not.

17 Q. Do you have an opinion about what this document
18 might represent?

19 A. I would have to examine it.

20 Q. Why don't you take a minute to do that?

21 A. (Witness complies.) Oh, it appears to be a
22 report of crop acreages and yields for the year 2005.

23 Q. I direct your attention to section two.

24 A. (Witness complies.)

25 Q. It's titled District Lands in Irrigation

1 Rotation.

2 A. Yes.

3 Q. Do you see Box G acres not irrigated on the
4 right-hand side?

5 A. Oh, yes.

6 Q. There's a figure there of nineteen thousand one
7 hundred fifty-five point eight.

8 A. Yes. I see it.

9 Q. That number, by my calculation, is different
10 from the number that you have calculated as the sum of
11 dryland farmed acres and acres subject to prevented
12 planting. How do you explain that discrepancy?

13 A. I don't know. I would have to compare this
14 number here to the number that I eventually appeared in
15 the KBID annual report. If --

16 Q. Would you like to take some time to do that? I
17 mean is that something that you can do from your report?

18 MR. WILMOTH: Would you mark this as Exhibit 7.

19 EXHIBITS:

20 (Deposition Exhibit No. 7 marked for
21 identification.)

22 A. Well, I'm not -- I'm not exactly sure how to
23 proceed here. The acres from Table 10, I have acres in
24 dryland alternative in 2005 above Lovewell, eleven
25 thousand eight hundred and fifty-five; below Lovewell,

1 two thousand ninety-nine that adds to about thirteen
2 thousand nine hundred. Of course, it's less than the
3 nineteen thousand which is in G. What -- what we don't
4 have which is apparently a part of G is the land -- I'm
5 assuming this must include the certified acreage which
6 is not irrigated. The land which presumably farmers are
7 either not irrigating or were irrigating as dryland
8 crops voluntarily. And in this analysis, we are only
9 concerned with the land which was converted from
10 irrigated to dryland. We are not concerned with that
11 difference between certified acres and normally
12 irrigated acres. You said the difference was
13 twenty-five percent in the long-term average, and I said
14 it's eighty-nine point one subtracted from a hundred
15 percent, eleven percent of the acreage. I'm assuming
16 that that acreage is added into that to give the
17 nineteen thousand which, I think, would make them
18 balance.

19 I suspect, if you add the irrigated acreage to
20 that nineteen thousand, you would probably get the
21 forty-two thousand nine hundred and ninety which appears
22 up in section one.

23 Q. Uh-huh.

24 A. I would have to check that, but that's my
25 hypothesis.

1 Q. Sure. But my question specifically, though, is
2 there is an amount listed in G of the nineteen thousand
3 one fifty-five --

4 A. Yes.

5 Q. -- for which your analysis did not account; is
6 that correct?

7 A. We are not -- we are not including that. That
8 presumably is land which was not being irrigated for
9 other reasons.

10 Q. But you don't know that, do you?

11 A. We have not looked at that.

12 Q. You have or have not?

13 A. Have not.

14 Q. Okay. Thank you.

15 Let's turn to page five forty-nine, the crop
16 yield effects analysis. And this is where the party
17 really starts because we're getting interesting now.
18 Mr. Draper, will tell you my favorite thing is
19 equations. I just can't get enough of them.

20 In the introduction of this section, Doctor,
21 you note that, In the absence of authoritative irrigated
22 yield data, this analysis -- your analysis -- used a
23 yield model described by Klocke.

24 A. Yes.

25 Q. What would you consider authoritative data?

1 A. Measured yield data rather than survey yield
2 data for KBID.

3 Q. Can you explain the difference?

4 A. The KBID yield data came from surveys,
5 voluntary response surveys. Kenny indicated that most
6 of his better farmers responded, but not all.

7 Q. So, you have concerns about the quality of the
8 responses?

9 A. I have concerns about the quality of the
10 responses which is part of the reason why I have
11 concerns about the super high yields in 2005. They
12 were surveys. People responding to surveys tend to
13 sometimes give self-serving answers.

14 Q. Nine out of ten, in fact, right?

15 A. If I could get access to the yield reports
16 which were given to USDA on crop yields or established
17 yield records, I would consider that more alternative,
18 but that's confidential information, and we did not have
19 access to it.

20 Q. So, in light of that, can you explain in your
21 own words how you incorporated Dr. Klocke's work in your
22 report?

23 A. We used Dr. Klocke's equations. We input into
24 them the increment of water that should have been
25 delivered. That allowed us to calculate estimates of

1 dryland yields, yields with the amount of water actually
2 delivered and yields with the amount of water that
3 should have been delivered. These yields were then
4 incorporated into the crop budgets, and were used --
5 were multiplied times prices to calculate gross returns.

6 Q. Are you aware of other analyses in which Dr.
7 Klocke's work has been applied in that way?

8 A. I'm aware that these yield estimates, yield
9 estimating equations were prepared at least in part for
10 purposes of giving guidance to the federal crop
11 insurance program for estimation yields appropriate for
12 calculation of rates in insurance.

13 Q. Insurance premiums?

14 A. Yeah, insurance premiums.

15 Q. To your knowledge, has this analysis ever been
16 employed in a case like this, an interstate damages
17 case?

18 A. Not to my knowledge.

19 Q. You didn't employ this in the Arkansas River
20 case?

21 A. No.

22 Q. Are the equations spanning pages five
23 forty-nine to five fifty-one entirely Dr. Klocke's work,
24 or did you modify those in any respect?

25 A. They are entirely Dr. Klocke's work. I believe

1 that section is word for word from his report.

2 Q. In terms of your reliance on additional outside
3 work, I would like to ask you about Table 12 of your
4 report.

5 A. Table 12, okay.

6 Q. Yes, sir.

7 A. (Witness complies.) Yes.

8 Q. Did you rely entirely on Spronk to create this
9 table?

10 A. Yes.

11 Q. With regard to Table 13, did you rely entirely
12 on Dr. Klocke to create that table?

13 A. Yes.

14 Q. Are you in a position to discuss any of the
15 details of the work that Dr. Klocke did, or should I
16 direct my questions regarding this to Dr. Klocke?

17 A. You should direct them to him.

18 Q. Now, with regard to --

19 MR. WILMOTH: Well, let me take a break and see
20 how we can shorten things up. I figure that would be
21 okay with you.

22 DR. HAMILTON: That's okay.

23 MR. WILMOTH: Let's just take ten, and we'll be
24 back at 4:10 (sic).

25 (Whereupon, the deposition was in recess at

1 5:00 p.m. and subsequently reconvened at 5:15 p.m.; and
2 the following proceedings were had and entered of
3 record:)

4 MR. WILMOTH: Okay. We will just try to go
5 through and finish up unless you need a break.

6 DR. HAMILTON: Okay.

7 MR. WILMOTH: Okay. Dr. Hamilton, thank you.

8 Q. (BY MR. WILMOTH) I would like to turn your
9 attention to the crop budget analysis on page seven.

10 A. (Witness complies.)

11 Q. I understand in working this section up you
12 relied on a master thesis by Mr. Beaton; is that
13 correct?

14 A. I made reference to it, yes.

15 Q. What was the use of that master thesis?

16 A. The master's thesis was used to break down
17 machinery costs into a couple of components.

18 Q. Did you attempt to confirm the procedure in the
19 master thesis was consistent with any other literature
20 in the field?

21 A. No.

22 Q. Do you know whether it's been applied in any
23 other contexts?

24 A. I do know that the methodology was applied in
25 an extension publication from the University of -- from

1 KSU.

2 Q. Do you know what the subject matter of that
3 publication was?

4 A. Something referencing machinery costs.

5 Q. Various inputs essentially appear in Tables 19
6 through 28?

7 A. Correct.

8 Q. Is that correct?

9 A. Yeah.

10 Q. How were those derived?

11 A. Which -- the machinery cost ones?

12 Q. The produced inputs in Tables 19 through 28?

13 A. Oh. They came from the KSU crop budgets.

14 Q. Was any effort made to cross-check those
15 against the actual inputs in KBID?

16 A. No.

17 Q. Did you make any effort to cross-check yield
18 estimates with actual estimates in KBID?

19 A. As I indicated, I don't have a great deal of
20 trust from the yield estimates that appear in the annual
21 reports.

22 Q. You note that the corn budget costs are linear
23 functions of yield; is that correct?

24 A. Yes. Some -- some elements in the budgets are.

25 Q. Does irrigation water application display the

1 same linear function?

2 A. No.

3 Q. Why is that?

4 A. I do not remember particularly what the pattern
5 was there.

6 Q. Is that something you can determine or --

7 A. Well, irrigation costs -- irrigation costs were
8 made a function of water application. The way the crop
9 budgets worked, as obtained from KSU, there was a cost
10 per acre inch, and I utilized those costs per acre inch.

11 Q. Why are the crop drying and fertilizer costs
12 adjusted as a linear function of yield?

13 A. They were, in fact, proportional to yield as --
14 as was done in the KSU budgets.

15 Q. Is there a basis for assuming that farmers
16 apply less fertilizer in the years --

17 A. Yes.

18 Q. -- when there's less water?

19 A. Yes.

20 Q. What is the basis for that assumption?

21 A. Crops, plants respond to a balance of water
22 nutrients. If you get them out of sync, it can be
23 damaging to yields as well as a waste of money.

24 Q. What's the basis for assuming irrigation system
25 maintenance costs are proportionate to irrigation

1 investment costs and the amount of irrigation water

2 applied?

3 A. That was one of the places that I had to use

4 some judgment.

5 Q. What was your basis for assuming that half of

6 the land receiving prevented planting payments grew a

7 dryland forage crop?

8 A. That was another professional judgment. My --

9 well, I'll stop at that. This is another professional

10 judgment.

11 Q. Why did you use the KSU cane hay budget as

12 representative of those grass crops?

13 A. The requirements for prevented planting allow

14 you to grow a cover crop. The need for a cover crop

15 would be a crop that could be -- could be established

16 without irrigation because you're in a no water

17 situation. It has to be something that's reasonably

18 good for the land, and the requirements for prevented

19 planting are things that can't be harvested or grazed

20 until after November 1st which means that it has to be

21 something -- or preferable would be something that would

22 be useful under those circumstances. And if the cane

23 hay or the sudan grass or some such crop is grown, its

24 planting could be timed that it might still be useful

25 with a late harvest.

1 Q. So, it sounds like some more professional

2 judgment?

3 A. Yes.

4 Q. What's the --

5 A. Let me say that -- well, I'll stop at that.

6 Q. That's okay. What's the basis of your

7 professional judgment? Is that just your experience in

8 the area or --

9 A. My experience of what farmers do.

10 Q. Generally?

11 A. If they want to protect the land, they need

12 some cover crop.

13 Q. But as for all of your instances in which you

14 exercise your professional judgment, is that based on

15 general understandings or interviews with those in KBID?

16 A. My general understanding.

17 Q. With regard to the infrastructure -- irrigation

18 infrastructure type --

19 A. Yeah.

20 Q. -- you, as I understand it, assumed that 2010

21 would be a representative year for the type of

22 infrastructure that would be employed in '05 and '06; is

23 that right?

24 A. I'm not sure where -- where you are there.

25 Q. Let me direct your attention to page seven in

1 the middle.

2 A. Oh. Page seven?

3 Q. Yes.

4 A. Okay. So, you're talking about the

5 distribution between sprinklers and --

6 Q. Correct.

7 A. Okay. Your word "infrastructure" confused me.

8 Q. Yes. My question is, why did you select 2010

9 as the year to --

10 A. There were two available surveys of sprinklers

11 and -- or systems, '06 and 2010. '06 didn't seem like a

12 very good year to use because there was a lot of -- a

13 lot of land that wasn't being irrigated because of water

14 shortage. So, I used the more recent one as more

15 representative than '06.

16 Q. So, how does water availability affect the

17 infrastructure distribution or the irrigation system

18 type distribution? Isn't that something that's already

19 in place by the time you learn of the shortage?

20 A. That's unclear. I should note that it makes

21 very, very little difference to the analysis.

22 Q. I want to ask you about the section entitled

23 On-Farm Direct Effects Outside KBID now, page ten or --

24 A. Yes.

25 Q. -- KS 555.

1 A. Yes.

2 Q. Again, I recognize that some of this work may
3 have been performed by Mr. Book, and in that case, you
4 may feel free to tell me that.

5 This section indicates that had Kansas received
6 the required amount of irrigation water, it would have
7 been applied to KBID lands, and a portion would have
8 appeared downstream as return flows. On what do you
9 base that view.

10 A. Knowledge of irrigation systems and
11 consultation with Spronk.

12 Q. Did you conduct any independent analysis of the
13 drainage system, for example, in KBID?

14 A. No.

15 Q. Okay. Did you make any effort to determine how
16 much water had been applied within KBID?

17 A. That was provided by Spronk.

18 Q. So, if I direct your attention to Table 34, is
19 this all Mr. Book's work, or did you participate in
20 developing this?

21 A. Table 34 comes from Spronk.

22 Q. I would like to ask you the same about Table
23 35.

24 A. Table 35 is basically a reiteration of the
25 numbers in 34. So, my answer is the same. So, Spronk.

1 Q. In conducting this analysis outside of KBID,
2 why did you use the same crop mix within and outside of
3 KBID?

4 A. I didn't have any information the crops
5 differed. Consultation with Kenny and with some of the
6 farmers that we talked to, and with Scott Ross,
7 suggested that the best approach was probably to assume
8 the same crop mix.

9 Q. Are you aware of any differences, say, in soil
10 type or irrigation infrastructure system type that might
11 influence that between KBID and lands outside of KBID?

12 A. No.

13 Q. Did you make an attempt to investigate this
14 factor?

15 A. We -- I talked about that with the people I
16 indicated. And we did not come up with any information
17 that suggested it ought to be different.

18 Q. Why did you use the same crop yield estimation
19 approach within and outside of KBID, same reason?

20 A. Same reason.

21 Q. So, you're not aware of any difference on --
22 between lands within or without KBID --

23 A. Correct.

24 Q. -- that might affect any climate patterns or
25 anything else, correct?

1 A. Correct.

2 Q. I would like to talk with you now a little bit
3 about the Kansas off-farm secondary losses, moving to
4 page five fifty-seven, and I recognize some of this work
5 may have been done by Dr. Robison.

6 A. So, which -- which page?

7 Q. Five five seven. The Kansas off-farm secondary
8 losses.

9 MR. DRAPER: It's page twelve of your report.

10 DR. HAMILTON: Oh.

11 MR. WILMOTH: I'm sorry, do you not have the
12 Bates stamps?

13 DR. HAMILTON: Yes.

14 MR. WILMOTH: I'm sorry, I didn't know if your
15 copy --

16 DR. HAMILTON: No, I was -- yeah. My page
17 numbers appear to be discontinuous between the tables
18 and the -- and the --

19 MR. WILMOTH: Is it easier for me to refer
20 directly to the report numbers?

21 DR. HAMILTON: It is. It's easier to refer to
22 the report numbers.

23 MR. WILMOTH: Thank you. Sorry it took me five
24 hours to figure that out. I'll do that in the future.

25 Q. (BY MR. WILMOTH) Can you just tell me

1 generally what role you played in developing this

2 portion of the report?

3 A. By "this portion," you mean Kansas off-farm

4 secondary losses?

5 Q. Correct.

6 A. I worked with Hank on the general philosophy of

7 what we were trying to do there, and Hank did the

8 calculations.

9 Q. Okay. So, did you direct Mr. -- excuse me, Dr.

10 Robison to perform the calculations in a certain way?

11 A. No. I did not direct him. And I guess you

12 will have to ask him for the logic behind his

13 calculations. He did not specifically operate under my

14 direction, if that's the question. We worked jointly.

15 Q. You have got a series of terms in this section

16 on pages twelve and thirteen. The first is "value

17 added." Can you just explain that concept to a

18 non-economist?

19 A. It's basically the value of production minus

20 the cost of the purchased inputs going into its

21 production.

22 Q. Is this a concept that you regularly employ in

23 your analyses?

24 A. Yes. Value added is a widely used concept,

25 widely used measure of income in economics.

1 Q. And you have got a secondary direct and
2 indirect impacts. Can you just generally explain the
3 nature of those?

4 A. The secondary direct and indirect are what
5 happens to the money as farmers spend it on inputs; that
6 is, you buy fertilizer from a fertilizer dealer and you
7 generate further rounds of income. So, it's -- it's the
8 following the money through the successive purchases in
9 that regional economy.

10 Q. And what's the typical use of that type of
11 analysis?

12 A. The use or making of it here, looking at the
13 regional impact at some event.

14 Q. So, have you utilized this as a tool in other
15 damages calculations?

16 A. Yes.

17 Q. Which ones?

18 A. We utilized it in the Arkansas River case. We
19 used it in the -- in our involvement in the Pecos River
20 case which preceded it. I was making use of my
21 knowledge of it in the report that you brought up from
22 Holland. It's commonly used.

23 Q. What was the nature of your involvement in the
24 Pasco River case?

25 A. I was part of the economics team on that.

1 Q. On behalf of which state?

2 A. New Mexico.

3 Q. You also -- excuse me.

4 With regard to your section of secondary direct
5 and indirect impacts, you note, The effects associated
6 with the purchase of imported inputs occur in the states
7 hosting their production. Can you explain that for me?

8 A. If one state -- if producers, farmers in one
9 state buy inputs directly from another state, the income
10 associated with that accrues in the other state.

11 Q. And did you account for that phenomenon in your
12 report?

13 A. In the calculations which Hank did, he utilized
14 regional purchase coefficients which specified the
15 amount of various items which are bought in state,
16 regional purchases. I'll defer further discussion of
17 that to Hank.

18 Q. What about this concept of the secondary
19 consumer spending-induced impacts, can you explain that?

20 A. If -- when farmers get income, they spend it on
21 various things: food for their kids, various consumer
22 items. If the fertilizer dealer makes profits, he
23 spends the income on consumption. So, the induced
24 income effect is the effect of spending of income on
25 consumer items.

1 Q. There's a section on page fourteen with the
2 heading, Constructing a Secondary Effect Model. Based
3 on our discussion today, I would infer that that's
4 probably a section I should direct questions to Dr.
5 Robison on?

6 A. Yes.

7 Q. It's getting easier to direct those questions
8 away from you now, isn't it, as we're getting later in
9 the day. More and more things that he did.

10 Okay. Let's jump ahead then to -- maybe I
11 should table that for a moment, and let's look at one of
12 the documents that was referred to in your CV.

13 Q. Can you identify this article (indicating)?

14 A. Title of it is Economic Impacts, Value Added,
15 and Benefits in Regional Project Analysis. This is a
16 1991 article in the American Journal of -- American
17 Agricultural Ec -- well, the journal of the American
18 Agricultural Economics Association.

19 Q. What was the purpose of this paper?

20 A. The purpose of the paper was to talk about the
21 role of value added and benefits in project analysis.

22 Q. And in this document, you list several issues
23 and errors, I believe you call them, that arise in such
24 analysis; is that correct?

25 A. Yes.

1 Q. What are those generally in your own words?

2 A. That's 1991.

3 Q. It's only been thirty years -- twenty years.

4 A. Twenty years. Well, one of the most important
5 ones would be the -- the use of gross output rather than
6 income or value added as a measure of impact.

7 Q. Which we talked about?

8 A. Yes. Another one which I -- is identified on
9 the second page of the report headed Opportunity Cost of
10 Factors Used. That is, in projects that last through
11 time displaced resources can be re-employed.

12 Q. How does that principle apply in the instant
13 case?

14 A. Well, in the instant case, the impacts we are
15 talking about can be thought about as single-year
16 impacts. They occur erratically. Such that we don't
17 expect significant displacement and re-employment of
18 factors of production.

19 Q. Is it your experience that farmers who
20 experience a difficult time just sit back and take it
21 all year or do they seek re-employment perhaps in the
22 construction industry?

23 A. Perhaps a bit of both. But my -- my experience
24 mostly they are -- they are willing to take it for a
25 while.

1 Q. How long?

2 A. That remains an empirical question.

3 Q. Meaning you have to research it to find the
4 answer or what?

5 A. Well, I tend to agree with the quote which I
6 make from Supalla that a hundred percent of the impacts
7 remain unemployed in year one.

8 Q. What about year two? We have got a two-year
9 event here, do we not?

10 A. We have two one-year events.

11 Q. Oh, I see. Would that be true even if this
12 condition occurred for ten consecutive years, would you
13 just have ten one-year events?

14 A. If the condition were allowed to continue and
15 there were no possibility of relief, I would expect to
16 see some adjustment.

17 Q. Let's talk about the treatment of mobile
18 resources as discussed further in the document, page
19 three thirty-seven at the top.

20 A. Yes.

21 Q. How was this addressed in your present
22 analysis?

23 A. It was not.

24 Q. Do you believe it was relevant?

25 A. Not for a one-year interruption.

1 Q. Why not?

2 A. There's not enough time for them to be
3 particularly mobile.

4 Q. Do you have an opinion how many consecutive
5 years it would take a KBID irrigator to become mobile?

6 A. No.

7 Q. A couple of pages further on, three
8 thirty-nine, you speak of the concept called "forward
9 linkages," do you see that?

10 A. Yes.

11 Q. How is that concept reflected in your present
12 analysis?

13 A. It is not. We had some discussion about
14 forward linkages. The fact that shortages of -- or
15 reduced production of corn in the region may well have
16 -- have caused a fuel alcohol plant not to locate in the
17 region. That would have been a forward linkage had it
18 occurred. We chose not to include that which is the
19 same advice as we are making in this paper. In general
20 forward linkages are tough to establish causation.
21 Although, they may be real.

22 Q. Uh-huh.

23 MR. WILMOTH: Let's mark that Exhibit 8,
24 please.

25 EXHIBITS:

1 (Deposition Exhibit No. 8 marked for

2 identification.)

3 Q. (BY MR. WILMOTH) Moving on to page two

4 eighteen, you have a section entitled Induced Effects in

5 Kansas of a Nebraska Payment to Kansas.

6 A. Correct.

7 Q. Do you see that?

8 A. (No response made.)

9 Q. I understand that that was a concept that you

10 developed in response to something Dr. Sunding offered

11 earlier; is that correct?

12 A. That is correct.

13 Q. What is the size of damage payment that you

14 assumed for this analysis?

15 A. About five point one million which appears on

16 Table 49.

17 Q. Is the negative impact on secondary consumer

18 induced spending from overuse equal to the positive

19 impact on such spending resulting from a payment?

20 A. That is -- remains an empirical question which

21 I don't believe there's any empirical answers on. We

22 assumed it was.

23 Q. Now, with regard to the time value money

24 discussion here --

25 A. Yes.

1 Q. -- do I assume -- do I understand that you
2 assumed that the rate you are going to use as the high-
3 grade, tax-free municipal bond?

4 A. Yes.

5 Q. Okay. Did you consider any other rates?

6 A. We could have used rates based on farmer
7 borrowing costs, farmer cost of equity, farmer cost of
8 operating capital. However, those are United States
9 Department of Agricultural in some of its cost cutting
10 efforts has made those numbers more difficult to find.
11 The numbers that we chose to use we consider to
12 be conservative numbers. Most of the other kinds of
13 numbers we thought about using would have been higher.
14 So, we just settled on these as being -- being
15 conservative.

16 Q. Okay. I would like to turn your attention now
17 to Exhibit 4, the, what I will call the Nebraska gains
18 report?

19 A. Yes.

20 Q. You were primarily responsible for this
21 document; is that correct?

22 A. Yes. With the same division between primary
23 and secondary as in the other report.

24 Q. Dr. Robison being the secondary?

25 A. Yes.

1 Q. In what other contexts have you calculated an
2 adverse party's gains to determine damages?

3 A. We calculated gains in both the Arkansas River
4 case and in the Pecos River case, and I don't believe
5 they actually played much part ultimately in either
6 case.

7 Q. So, they weren't used by the Court to do that?

8 A. That's my understanding.

9 Q. Now, I have a series of questions here that are
10 similar to the ones I asked you --

11 A. Sure.

12 Q. -- on the initial report, so bear with me. I
13 just want to make sure we have a clear record.

14 A. Yes.

15 Q. Once again, you note in your report that Spronk
16 quantified the required water with Nebraska overuse?

17 A. Yes. I perhaps should clarify that to say that
18 Spronk's, rather than saying the required water, was
19 more the required shutdown acreage.

20 Q. And if that quantification were incorrect in
21 any way, would that affect your report?

22 A. Yes.

23 Q. And Spronk determined certain actions that
24 Nebraska would need to take to stay in compliance with
25 the compact; is that right?

1 A. That is correct.

2 Q. And if that were incorrect in any regard, would
3 it have an affect on your report?

4 A. It would feed through the link spreadsheets.

5 Q. You indicate that the purpose of your report is
6 to determine the value of certain benefits enjoyed by
7 Nebraska. What benefits are you referring to?

8 A. Referring to the income of value added that
9 accrued to Nebraska directly and secondary.

10 Q. So, these are not the same thing as the cost
11 associated with the measures that Spronk identified, or
12 are those the same things?

13 A. Costs were included and calculated the impact
14 on gross crop production. We subtracted the cost of
15 production giving value added. And we compared the
16 value added as water was actually used versus water that
17 would have been used if the well shut down had been
18 implemented, et cetera.

19 Q. Let me try to ask it in a slightly different
20 way. I don't think I'm asking it very clearly.

21 Obviously you calculated some gains that
22 Nebraska received, and those were benefits, as you
23 called them. Does your ultimate figure include what I
24 would call cost avoidance of taking certain measures?

25 A. I guess I'm still not sure what you're asking.

1 Q. For example, the cost that would be associated
2 with purchasing surface water.

3 A. No. That was not included. A -- if surface
4 water had been purchased, it would have been a transfer
5 between the treasury of the State of Nebraska or the
6 budget of the State of Nebraska versus the farmers who
7 received it. We treated it is a wash.

8 Q. That would have been a wash?

9 A. (Witness nods head.)

10 Q. On your page one, you have got a section
11 entitled On-Farm Direct Effects from not shutting down
12 wells. Again, just to be clear, Mr. Book provided you
13 the analysis of how many wells should have been shut
14 down; is that right?

15 A. Correct.

16 Q. Or perhaps more specifically the shutdown area?

17 A. Correct.

18 Q. And you also note that if the shutdown
19 occurred, more water would have been available in the
20 river. Is that a conclusion that Mr. Book drew, or did
21 you draw that conclusion? And if so, on what did you
22 base that?

23 A. That is a conclusion from Spronk.

24 Q. So, with regard to Table 1, if I could direct
25 your attention to that, did you rely on Spronk to

1 prepare that table?

2 A. Yes.

3 Q. And you identify that -- or you identify

4 certain lands that should have been shut down, and you

5 indicate that crops would have been grown on these

6 lands, correct?

7 A. Correct.

8 Q. On what do you base that opinion, or do you

9 make the assumption that all of that land would have

10 been used?

11 A. We make the assumption that that land would

12 have been irrigated.

13 Q. Did you make any effort to determine whether

14 any of that might have been placed in a voluntary

15 retirement program or --

16 A. No.

17 Q. With regard to identifying the dryland crops --

18 A. Yes.

19 Q. -- that would have been grown, you indicate

20 that that requires taking into account soil types that

21 might prevent such production; is that right?

22 A. Correct.

23 Q. Did you do this in the other report which is

24 Exhibit 3?

25 A. No.

1 Q. Why not?

2 A. Nobody ever indicated that it was relevant in
3 terms of the people we talked to.

4 Q. Who did you speak with?

5 A. Talking with Kenny and farmers and so on, that
6 was never raised as an issue.

7 Q. Those are Kansas farmers?

8 A. Yes.

9 Q. Not Nebraska farmers?

10 A. Correct.

11 Q. With regard to these dryland crops, what did
12 you presume about precipitation in 2005 and 2006?

13 A. We did not make any assumptions about that.

14 Q. Could precipitation patterns affect yield?

15 A. Yes. They did.

16 Q. They did affect yield?

17 A. And the yields are reported here based on NASS
18 data.

19 Q. Is this Table 10 that you're referring to?

20 A. Yes.

21 Q. So, if I understand, then, in the Nebraska
22 gains report, Exhibit 4, you took the actual yields in
23 '05 and '06, but in the Kansas damages report, Exhibit
24 3, you used a hypothetical yield?

25 A. Yes.

1 Q. Why?

2 A. We would have used the same approach in
3 Nebraska by using yield functions which Klocke might
4 have derived if we had had the data to support it. We
5 did not have that data. We requested that data in some
6 of our production requests, but we did not have it, at
7 least, in the form that we could use to do the same kind
8 of analysis as we did in Kansas.

9 Q. Which data are you referring to?

10 A. Data on acres of irrigated land and specific
11 water application rates to those preferably by county.

12 Q. Earlier you suggested that farmers would use
13 their best lands typically in a water-short situation;
14 is that right?

15 A. That is correct.

16 Q. Is there a relationship between that decision
17 and land class?

18 THE REPORTER: Land....

19 MR. WILMOTH: Land class.

20 A. Presumably there would be.

21 Q. (BY MR. WILMOTH) What would that relationship
22 be?

23 A. Class 1, 2, and 3 lands are best. And if I
24 were a farmer and was faced with limited water, I would
25 apply it to Class 1, 2, and 3 lands before the inferior

1 land.

2 Q. And did you make that determination in this
3 report?

4 A. In this report, we assumed that the acreage
5 designated by Spronk were shut down.

6 Q. Regardless of class?

7 A. Regardless of class.

8 Q. I would like to direct your attention to page
9 five with the heading On-Farm Direct Effects From Not
10 Acquiring Additional Canal Water.

11 A. Yes.

12 Q. Again, bear with me if some of these questions
13 are repetitive, but you state that in addition to
14 shutting down wells, Nebraska should have acquired
15 additional surface water. Is that a conclusion Mr. Book
16 provided you?

17 A. That is.

18 Q. And you characterize Nebraska's failure to
19 acquire that was a benefit to Nebraska; is that fair?

20 A. Correct.

21 Q. Do you know who would have paid for that water
22 had Nebraska acquired it?

23 A. I didn't inquire into that.

24 Q. If --

25 A. If it were the state, it's a wash.

1 Q. If it were the state, then it's a transfer, I

2 think is a term you used earlier?

3 A. Yes.

4 Q. Do you have any idea what the payment might

5 have been, the dollar value of the payment?

6 A. No. There was water acquired historically, and

7 I have seen that, but I do not recall the figures on

8 what was paid.

9 Q. If it were, say, a million dollars for the sake

10 of this question, why isn't that cost, to the extent

11 it's avoidable, the extent of Nebraska's benefit?

12 A. If would have been a benefit to the recipients

13 of the buy-outs making it a transfer.

14 Q. And if those payments were made, how would that

15 affect your analysis from the state to its producers?

16 A. Repeat that.

17 Q. If such payments were made by the state to its

18 producers, how would that affect your analysis?

19 A. It would not.

20 Q. Okay. On page six, again you identify the

21 benefit accruing to Nebraska by not using stored water;

22 is that right?

23 A. Yes.

24 Q. Is that something that Mr. Book quantified for

25 you?

123

1 A. Yes.

2 Q. Okay. Was that -- well, if you know, does that
3 benefit rely on certain assumptions about how that water
4 might be used?

5 A. Actually, I believe portions of that water were
6 used which we use as a measure of its value in terms of
7 acreage affected.

8 Q. But it is not relevant to you how that unused
9 block would ultimately be used?

10 A. Well, it's relevant that the unused storage
11 water had benefits to Nebraska because it could be used
12 later to grow crops. By not using it in 2006, I
13 believe, Nebraska figured it was beneficial to -- to the
14 state.

15 Q. So, this is water you identified as being used
16 in 2008 and 2009?

17 A. That's what --

18 Q. Or Mr. Book, I mean.

19 A. -- Book did.

20 Q. Did you elect to use the crop budgets for this
21 analysis?

22 A. Yes, I did.

23 Q. Why did you use the budgets for '05 and '06 to
24 determine the benefits in '08 and '09?

25 A. Consistency, I guess.

1 Q. But the budgets change every year, right?

2 A. Yeah. It -- it might have been possible to
3 have used budgets from the other year. It might have
4 made a small difference, not much.

5 Q. Do you know which way?

6 A. No. I do not know which way.

7 Q. Page seven under the heading Nebraska Off-Farm
8 Secondary Benefits. I just have a couple of very broad
9 questions here.

10 Did you use the IMPLAN model essentially in the
11 same way here as you did in the actual damages report,
12 Exhibit 3?

13 A. Yes. Except it was a Nebraska IMPLAN model.

14 Q. Very important difference.

15 And so, then, did you effect -- evaluate the
16 effect of the Nebraska payment the same as in the other
17 report?

18 A. I'm confused by your question. You're talking
19 about payments, but the particular section you're
20 referring on Table 7 here is talking about the benefits
21 calculation.

22 Q. Sure. I'm skipping ahead, excuse me.

23 A. Okay.

24 Q. Page thirteen.

25 A. Okay. (Witness complies.)

1 Q. Okay. So, the question is essentially did you
2 employ a similar analysis to determine the effect of the
3 a payment?

4 A. Yes. Employed a similar analysis, although in
5 the negative. We are saying that if Nebraska had been
6 asked to give up a payment, that would have had a
7 further negative impact on the economy of Nebraska. So
8 that the payment plus the negative induced effect would
9 in total remove the total benefits from Nebraska.

10 Q. Doctor, I'm going to hand you an article that I
11 believe you wrote in 1994 and ask you to identify it.

12 A. The title is Interregional Spillovers and
13 Regional Impact Assessment, New Mexico, Texas and the
14 Supreme Court.

15 Q. And did you author this document?

16 A. Yes.

17 Q. Was Dr. Robison a co-author?

18 A. Yes.

19 Q. What was the purpose of this article?

20 A. This report --

21 MR. WILMOTH: This will be Exhibit 9 also.

22 EXHIBITS:

23 (Deposition Exhibit No. 9 marked for
24 identification.)

25 A. This report grew out of the Pecos River, Texas

1 versus New Mexico.

2 Q. (BY MR. WILMOTH) And you were working for the
3 State of New Mexico; is that correct?

4 A. Correct. This paper documents some of the
5 conclusions in that case.

6 Q. Were these conclusions that you helped to
7 develop?

8 A. Yes.

9 Q. And generally what was the nature of the
10 conclusions that you're referring to in this document?

11 A. The conclusion of this document was that the
12 use of the irrigation water in New Mexico had
13 significant spillover effects into the State of Texas.

14 Q. And why was that the case?

15 A. That was the case because the irrigated area
16 tended to be within economic regions that were dominated
17 by, as I remember it, Lubbock and Midland, Odessa and --
18 oh, what's the big city down there in Texas?

19 Q. It's your client.

20 A. You're right. Thank you. I believe this paper
21 -- it's supposed to have maps. They don't have our maps
22 in here. Some of those are beautiful hand drawn maps,
23 too, as I remember. But at any rate, the -- that
24 particular part of New Mexico is economically dominated
25 by Texas.

1 Q. So, why is it important to recognize economic
2 linkages across political boundaries?

3 A. Because economic effects can extend to spill
4 across boundaries.

5 Q. And what are the political boundaries at play
6 in the instant case, Kansas V Nebraska?

7 A. Well, the state line.

8 Q. Are those recognized in your economic analyses?

9 A. The paper which we are referring to from the
10 Pecos case did contain a map which included the Bureau
11 of Economic Analysis Economic Areas. The BEA develops
12 economic areas which -- which outline, you know, the
13 dependence, you know, of the hinterland on central
14 places and so on. And if one looks at the BEA economic
15 areas in the Pecos region in Texas, the area where the
16 irrigation occurred is dependent on, as I said, the
17 central places of El Paso, Midland, Odessa, and Lubbock.
18 Therefore, one could anticipate significant economic
19 spillovers there.

20 Q. What is the relevant BEA economic region in our
21 case, Kansas V Nebraska?

22 A. The BEA designation of economic areas in
23 Kansas, the northern boundary of Kansas forms the
24 boundary between -- well, there's two BEA areas across
25 the top of Kansas. One centered on Salinas, one

1 centered on.... well, somewhere over to the east but
2 with a definite border between the BEA areas and the --
3 in Kansas and the BEA areas in Nebraska.
4 In Nebraska there's an area centered, I
5 believe, on Kearney and another BEA area centered on, I
6 believe, Lincoln, and the adjacent areas are divided by
7 the state line. The same goes with the western
8 boundary, The western boundary economic areas tend to
9 follow the state line.
10 Q. So, are you suggesting there is no
11 interregional spillover in the instant case?
12 A. My suggestion is that it is small, and we did
13 not include it in our analysis.
14 Q. Why not?
15 A. Because of the -- it was judged that it was
16 small and could not -- could be not included.
17 Q. On what did you base that judgment?
18 A. Based on the BEA areas.
19 Q. In your Pecos River article, you noted a twenty
20 to one ratio in terms of the potential benefit, I
21 suppose, of irrigation in New Mexico. Do you have an
22 opinion on what that ratio would look like in this case.
23 A. I suppose what you're referring to is the
24 bottom line on each of these two reports.
25 Q. (Counsel nods head.)

1 A. The estimate of the damages which I calculated
2 for Kansas and the estimate of the benefits that I
3 calculated for Nebraska.

4 Q. Any idea what that ratio is off the top of your
5 head?

6 A. A bit over ten to one.

7 Q. In your article, you pose a fundamental
8 question, as you call it, what would have been the net
9 benefits to Texas if it had gotten the water and the
10 direct and indirect impacts which that implies but at
11 the cost of losing spillover benefits because of the
12 associated reduction in New Mexico irrigated acreage.
13 Was that the fundamental question in your mind in this
14 paper?

15 A. No. In this case, we --

16 Q. In this paper, Exhibit 9.

17 A. Oh, in this. Okay.

18 Q. Was that your fundamental objective, answering
19 that question?

20 A. Now, where was the quote you were reading?

21 Q. It would be at the very bottom of the first
22 page, the question is.....

23 A. Well, yeah. That was the fundamental question
24 of this paper, yes.

25 Q. But that question is inappropriate in the

1 instant case?

2 A. Yes.

3 Q. And, if I understand it, that's because these

4 BEA boundaries don't cross the state line?

5 A. Correct.

6 Q. In your paper, Exhibit 9, you reference various

7 hierarchies of economic activity. Do you know what the

8 hierarchy is in the KBID region?

9 A. We have not tried to estimate that.

10 Q. What relation do you think the Nebraska/Kansas

11 borders bear to the relevant regional economy?

12 A. I believe there's some movement across the

13 border, not a great deal.

14 Q. On page three of your article, Exhibit 9, you

15 reference a spillover coefficient. Does that sound

16 familiar, that term?

17 A. Yes.

18 Q. What does that coefficient represent?

19 A. As I remember it, we were inventing language at

20 the time we wrote the paper. Can you give me the direct

21 reference where I --

22 Q. If you look at pages -- it starts on page

23 three, but it's really discussed on pages four and

24 five --

25 A. Right.

1 Q. -- at the junction there.

2 A. Uh-huh. Okay.

3 Q. Specifically in this case you identified --

4 excuse me, in the Pecos case you identified a

5 coefficient of point one. Does that sound right?

6 A. I would accept that subject, I guess.

7 Q. You're welcome to take a look it.

8 A. Yeah. Yeah.

9 Q. I'll direct your attention to the first full

10 paragraph on page five.

11 A. Okay.

12 MR. DRAPER: Read it, if you need to. Compare

13 it, if you need to.

14 DR. HAMILTON: Okay.

15 A. Well, in -- you know, in the paper we are -- we

16 are talking in general about spillover coefficients.

17 Q. (BY MR. WILMOTH) Sure.

18 A. I'm looking through the literature for various

19 ways that we can quantify it. I talk about the -- at

20 the bottom of page four -- Australian example. It

21 presents a wide range of spillover coefficient

22 possibilities. It does bracket our point two, point

23 three figure, reference to a paper by Carter, point one

24 or point two spillover coefficients for irrigation. The

25 Roswell-Carlsbad area should be higher than that because

1 of the closeness of the Texas border. We conservatively
2 apply a coefficient of point one.

3 In this paper -- and these numbers -- these
4 numbers were not a part of the court case. These
5 numbers were refined for purposes of this paper. We are
6 looking in the literature for numbers, and we are doing
7 a bit of sort of sensitivity analysis of what the
8 implications of those numbers would be in this case. As
9 I assume you're aware, the New Mexico versus Texas was
10 settled during trial and did not set a precedent.

11 Q. Due to your good work actually.

12 A. So, we did not definitively estimate a
13 spillover coefficient which, you know, if this -- this
14 number applies. We talked about the range of them. We
15 talked about the implications of them.

16 Q. So, in the Pecos case and in your article in
17 particular, what is the implication of the spillover
18 coefficient of point one?

19 A. The spillover coefficient of point one, as I
20 remember it, meant that Texas was better off to let New
21 Mexico use the water.

22 Q. What do you think is the appropriate spillover
23 coefficient in this case?

24 A. We have not tried to estimate that.

25 Q. What if it were point one?

1 A. That would be significant. I doubt if it's

2 that high.

3 Q. By "significant," what do you mean?

4 A. I've forgotten exactly how we defined that

5 spillover coefficient and exactly how that number went

6 into the calculation.

7 Q. Would you apply it to the Nebraska gains?

8 A. I don't remember how mathematically that number

9 was used in such a calculation.

10 MR. WILMOTH: All right. Why don't we take

11 five minutes, John, and see if we can do any cleanup

12 today or just come in in the morning.

13 (Whereupon, the deposition was in recess at

14 6:28 p.m. and subsequently reconvened at 6:34 p.m.; and

15 the following proceedings were had and entered of

16 record:)

17 MR. WILMOTH: On the record. For the record we

18 have discussed with counsel from Kansas and find it

19 advisable to reconvene tomorrow at 8:00 a.m.

20 Thank you.

21 (Deposition recessed at 6:34 p.m. to be

22 continued at 8:00 a.m. on Thursday, February 9, 2012.)

23 /////

24 /////

25 /////

1 THURSDAY, FEBRUARY 9, 2012 - 8:05 A.M.

2 MR. WILMOTH: You ready.

3 DR. HAMILTON: I'm ready.

4 MR. WILMOTH: Good morning, Doctor.

5 DR. HAMILTON: Good morning.

6 MR. WILMOTH: Thank you for returning today.

7 We always appreciate that.

8 DR. HAMILTON: You mean you had counter

9 examples for me?

10 MR. WILMOTH: Not yet. But you never know.

11 DR. HAMILTON: There's always that.

12 MR. DRAPER: Ambiguity.

13 JOEL HAMILTON, Ph.D.,

14 a witness of lawful age, having previously been duly

15 sworn upon his oath, testified as follows:

16 EXAMINATION (Continued)

17 (BY MR. WILMOTH)

18 Q. I have a couple of cleanup things I would like

19 to talk to you about.

20 A. Sure.

21 Q. Just to make sure I understand where we are on

22 a couple of points.

23 Yesterday we had a discussion for a brief

24 period about the section of your Kansas losses report,

25 which I believe is Exhibit 3.

135

1 A. Yes.

2 Q. Do you have that report handy?

3 A. Yes, I do now.

4 Q. A section entitled Crop Yield Effects.

5 A. Yes.

6 Q. That would begin on page four.

7 A. I have it.

8 Q. And I had asked you a few questions and a few

9 other questions were deferred for Mr. Klocke -- Dr.

10 Klocke. Is it Dr. Klocke or Mr. Klocke?

11 A. Doctor.

12 Q. Dr. Klocke. I have a few questions that I

13 would like to pose to you given the uncertainty, I

14 guess, that I have in terms of the distribution of work

15 and if you defer these to Dr. Klocke that's fine.

16 A. Yes. Sure.

17 Q. I would like to make sure they get asked --

18 A. Yes.

19 Q. -- to someone. In this discussion, do I

20 understand that you assumed that the irrigation

21 application rates were evenly distributed in both water

22 restricted years and years in which a full supply was

23 available?

24 A. Yes, that is assumed.

25 Q. And given the different irrigation requirements

1 for different crops, why would you assume that all the
2 fields would receive all the same irrigation levels?

3 A. We didn't have any data to support doing it
4 differently.

5 Q. Did you have any data to support that
6 assumption, or was that a professional judgment?

7 A. That was a professional judgment, and it was
8 probably a conservative assumption. My judgment is
9 having done it otherwise might have resulted in greater
10 value.

11 Q. And you assumed all the farmers in the district
12 would have applied ten-and-a-half inches of water in
13 2005 had that supply been available; is that right?

14 A. Correct.

15 Q. Did you compare the application rate that you
16 assumed under the full availability scenario to actual
17 rates in KBID in other years?

18 A. No.

19 Q. The economic productivity of irrigation water
20 varies over the course of an irrigation season, does it
21 not?

22 A. Yes.

23 Q. Did you take that variation into account in any
24 way?

25 A. I'll defer that to Klocke.

137

1 Q. Do you know if the yield model accounts for the
2 effects of actual precipitation?

3 A. I'll defer that to Klocke.

4 MR. DRAPER: That kind of answer will speed
5 things along.

6 (Discussion held off the record.)

7 MR. WILMOTH: I'll defer those, too, then.

8 Q. (BY MR. WILMOTH) Doctor, I'm going to hand you
9 the Kansas Bostwick Irrigation District 2010 Annual
10 Report and ask you if you have seen this document
11 before?

12 A. Yes, I have seen this.

13 Q. Do you recognize it as the annual report?

14 A. Yeah. Yes.

15 Q. For the year 2010?

16 A. Yes.

17 Q. Yes?

18 A. Yes.

19 Q. I wanted to look at this information in
20 relation to your selection of the period 1994 to 2000 as
21 representative of the amount of irrigation that would
22 have taken place in 2005 and 2006.

23 A. Yes.

24 Q. Now, if I look at the crop yields which are
25 listed on KBID five seventy-five, if you will take --

1 A. I find that.

2 Q. -- a look at that. In 19 -- in the period of
3 1994 through 2000, the years are in the left-hand
4 column, and the corn yields, for example, are in the
5 second column. Do you see that?

6 A. I find that, yes.

7 Q. If I do the mathematics on that, I come up with
8 an average of about a hundred and fifty-five bushels.

9 A. Over what period?

10 Q. The period you selected, 1994 to 2000.

11 A. Uh-huh.

12 Q. Would you accept that for now subject to
13 confirmation?

14 A. I will accept it subject to confirmation.

15 Q. And I notice --

16 A. What was the number you said?

17 Q. One hundred fifty-five.

18 A. Okay.

19 Q. Roughly. Approximately.

20 A. (Witness nods head.)

21 Q. Rounding. And then, if you look at the years
22 2005 and 2006, the yield is significantly higher in
23 those years, and I'm curious as to what you believe that
24 tells us about the relationship between the fact that a
25 particular year may be subject to water restrictions and

1 the yield?

2 A. For me it says several things. One, is that
3 yields of corn are increasing through time, and you see
4 that very strongly as you continue on in that series of
5 2010. The graph -- the graph would be very much of a
6 rising graph (indicating). Second, I would refer back
7 to what I said yesterday that the yields of irrigated
8 corn as recorded are yields for the acreage which
9 actually grew corn under the short-water supplies that
10 were available in those two years. So, as I said
11 yesterday, a rational farmer was growing corn on the
12 best land. And third, I would reiterate that I'm
13 somewhat distrustful of these numbers.

14 Q. All the numbers in the annual report?

15 A. The numbers which came from -- come from the
16 survey, crop yield survey.

17 Q. Now you mention that there's a strong trend in
18 increasing corn yields. Where do you see that trend
19 generally, from what years to what years?

20 A. I see it throughout for the time period which
21 spans from '61 through 2010. If one were to try to
22 place a line through that, you would certainly see an
23 increasing line inspite of the fact that some of the
24 years are water short.

25 Q. Do you see --

1 A. I'm sorry. It appears to accentuate in the
2 most recent years. The....okay. As is noted in the
3 table here, the 2009 year it has an asterisk, record
4 highest year recorded.

5 Q. Uh-huh. It seems that the trend takes quite a
6 jump from 2000 to 2009 which coincides with a period of
7 water short -- or water restrictions, I should say, does
8 it not?

9 A. Yeah. And again, these are not the -- these
10 acres which they did irrigate.

11 Q. Sure. But regarding --

12 A. So --

13 Q. -- those acres --

14 A. Yeah. Yes. So, the fact that some acres
15 weren't grown is not seen here.

16 Q. But what is that telling us about yield?

17 A. It's not telling us too much about yield
18 because....

19 Q. That was my question.

20 A. Yeah.

21 Q. Then, if you would turn to page five seven
22 seven.

23 A. (Witness complies.)

24 Q. If I understand correctly, you assumed that
25 ten-and-a-half inches would be applied to the fields in

1 2005, correct?

2 A. Correct.

3 Q. And you made that assumption because, in part,

4 that figure was derived from a period of years where

5 there were a lot of restrictions; is that correct?

6 A. I'm not sure I understand the question.

7 Q. Perhaps I should ask you, how did you derive

8 the ten-and-a-half figure.

9 A. The ten-and-a-half came from Spronk.

10 Q. Okay. So, you just took that at face value?

11 A. Uh-huh.

12 Q. Do you understand why that was selected?

13 A. It was -- my understanding is that it was based

14 on the required amount of water which was then spread

15 across the acres that should have been irrigated.

16 Q. Okay. So, if I understand, then, Book provided

17 you with a volume of water. You identified using your

18 eighty-nine percent multiplier the acreage that that

19 water should have been spread over; is that right?

20 A. That is correct.

21 Q. Do you recall what the volume of water was that

22 was provided to you?

23 A. No.

24 Q. You can refer to your report, if you would

25 like.

1 A. Do I, in fact, state that? It was not a number

2 which I actually used in calculation.

3 MR. WILMOTH: I'll see if I can find it.

4 DR. HAMILTON: Yeah.

5 Q. (BY MR. WILMOTH) Just reading the summary of

6 Mr. Book's report entitled Engineering Analysis of

7 Losses to Kansas Water Users From Nebraska's Overuse of

8 Republican River Water.

9 A. Okay.

10 Q. I will just read you the summary.

11 A. Yes.

12 Q. For the two years the combined additional

13 supply at the state line was sixty-nine thousand five

14 hundred acre feet. After deducting losses, the farm

15 deliveries for the two years would have increased by

16 approximately thirty-nine thousand acre feet.

17 Additional delivery to farms was computed to be twenty

18 thousand nine hundred acre feet in 2005 and eighteen

19 thousand one hundred acre feet in 2006. Does that sound

20 right?

21 A. That sounds correct.

22 Q. So, could you tell me with regard to 2005,

23 then, what you did with the figure twenty thousand nine

24 hundred acre feet?

25 A. I did not directly use that figure. I believe

1 that the numbers provided to me by Spronk was the per
2 acre figure. So, I did not use those numbers that you
3 read in any calculation that I did.

4 Q. So, did Spronk calculate the ten-and-a-half
5 inches?

6 A. Yes.

7 Q. He calculated the ten-and-a-half inches?

8 A. Yes.

9 Q. Mr. Book?

10 A. Mr. Book.

11 Q. All right. Now, referring your attention to
12 KBID five seven seven.

13 A. (Witness complies.) Okay.

14 Q. Okay. Doctor, so Mr. Book calculated the
15 ten-and-a-half inch figure, and I understand that that
16 was appropriate because it represented a situation that
17 was free of water restrictions.

18 A. Yes.

19 Q. Okay. So, if I refer you to five
20 seventy-seven, if you look at 2001, for example, do you
21 see that year?

22 A. Yes.

23 Q. It's asterisked as a year of short supply which
24 I assume that's what you mean by a water-short year; is
25 that a correct assumption?

1 A. Yes.

2 Q. And they deliver twelve inches per acre. Do
3 you see that?

4 A. I see that.

5 Q. So, why do you conclude that even in the case
6 of a delivery of ten-and-a-half inches there would be no
7 water restriction?

8 A. Can you rephrase that? I'm still not sure
9 which is the question.

10 Q. Why do you conclude, given this information --

11 A. Yes.

12 Q. -- that a year in which ten-and-a-half inches
13 would have been delivered would have been free of
14 water-short year restriction?

15 A. I'm having -- I'm having difficulty with the
16 question because the water-short restriction is a
17 definition of a -- of a condition at the beginning of
18 the season, and the amount of water that is actually
19 delivered is a functional that happens to water supplies
20 during the -- during the course of the season. I -- I
21 don't quite see how to respond to your question.

22 Q. Well, let me ask this.

23 A. Yes.

24 Q. What factors would influence the actual
25 delivery over the course of a season?

145

1 A. Significant things that might influence it
2 would be water supply changes throughout the irrigation
3 season.

4 Q. Are there any other factors that would
5 influence the amount of water actually delivered during
6 the season?

7 A. One thing that could, although I don't really
8 see it in these numbers, would be the acres irrigated.
9 The acres irrigated in 2001 were not appreciably
10 restricted as one would assume, so that doesn't appear
11 to apply to the era in which you're asking questions
12 about.

13 One sees that clearly down in the 2004, 2005
14 years where the acreage is substantially restricted.
15 So, that allows more water to be delivered to the
16 restricted acreage.

17 Q. Uh-huh. What about precipitation patterns?

18 A. As I indicated, precipitation patterns can
19 influence -- can add to the water supply during the
20 first of the year.

21 Q. Is it possible that precipitation patterns
22 could essentially serve the entire crop irrigation
23 requirement in any given year?

24 A. That's beyond my knowledge of hydrology.

25 Q. How do you typically calculate a crop

1 irrigation requirement?

2 A. I defer that to Klocke.

3 Q. How did you determine that 2005 and 2006 would

4 not have had water restrictions if the required water as

5 Book identified had been delivered?

6 A. I don't believe my report says that. I don't

7 think I did determine that.

8 MR. WILMOTH: Let's mark that as the next

9 exhibit.

10 THE REPORTER: Okay.

11 MR. WILMOTH: What number is that.

12 THE REPORTER: Ten.

13 MR. WILMOTH: Exhibit 10.

14 THE REPORTER: Yes.

15 EXHIBITS:

16 (Deposition Exhibit No. 10 marked for

17 identification.)

18 Q. (BY MR. WILMOTH) Doctor, I'm going to hand you

19 the report prepared by your predecessors in this

20 proceeding, Drs. Golden, et al. And I believe yesterday

21 you had indicated that you had reviewed this report.

22 A. Yes.

23 Q. Let me direct your attention to page four of

24 the executive summary.

25 A. (Witness complies.)

1 Q. Drs. Golden, et al., calculated various losses
2 in the second and fourth paragraph here that are
3 different from those you calculated. Do you see those
4 figures?

5 A. Yes, I do.

6 MR. DRAPER: What page are you on?

7 MR. WILMOTH: I'm on Roman -- little Roman four
8 down in the executive summary.

9 DR. HAMILTON: I'm not sure I can -- okay. I'm
10 on the wrong four. Okay. That is better.

11 Q. (BY MR. WILMOTH) My question is very simply,
12 what are the fundamental differences in your work that
13 led to the differing figures?

14 A. Probably most important is --

15 MR. DRAPER: Just for clarification, Tom, are
16 you asking him -- when you say "figures," bottom line
17 figures at the end of this report in terms of economic
18 loss, that type of thing?

19 MR. WILMOTH: Yes.

20 Q. (BY MR. WILMOTH) If you look at the last
21 sentence of the second paragraph on this page and the
22 last sentence of the fourth paragraph, you will see some
23 figures which I believe represented the direct loss and
24 the total loss which included both the direct and
25 secondary effect.

1 MR. DRAPER: Thank you.

2 A. Yes.

3 Q. (BY MR. WILMOTH) And again, my question is,
4 your -- as I understand it, your ultimate conclusions
5 differed, and my question is why. Fundamentally what
6 are the differences between your reports?

7 A. The most important factor is their use of a
8 different modeling framework for calculating the direct
9 farm effects.

10 Q. Are you referring to the yield model?

11 A. I'm referring to the yield model and the way
12 that yield model was used in -- in the calculations.

13 As -- well, we used a different yield model.

14 The -- a second important difference is that
15 they did not include any offset for the prevented
16 planting impacts. And the third important difference is
17 that they included the secondary induced effects which
18 we excluded.

19 Q. So, with regard to each of those, could you
20 tell me why you chose to select a different model -- a
21 different yield model than the IPYsim model.

22 A. I think I have the same problem with their
23 model that some of the others apparently had during the
24 non-binding arbitration. The model was fairly obtuse
25 and required a number of recalibration adjustments which

1 seemed not particularly defensible. The model makes
2 some assumptions about the curvilinearity of the yield
3 relationships which we could not accept and didn't want
4 to implement.

5 The -- their failure to include the offset for
6 prevented planting, I can't explain why they did that.
7 And the issue of induced effects, again, we agreed with
8 Sunding's criticism of that in the non-binding
9 arbitration and decided that Sunding's analysis was
10 correct.

11 Q. Are there parts of this report that you do
12 agree with?

13 A. Yes. We used the same -- we used the same crop
14 budgets that they used as initial data. We used some of
15 the same basic procedures for calculating the affected
16 acreage. We were using the same information from KBID's
17 annual reports.

18 Q. Did you, for example, when you calculated the
19 affected acreage --

20 A. Yes.

21 Q. -- I believe you -- both you and your
22 predecessors relied on this period 1994 to 2000,
23 correct?

24 A. Yes.

25 Q. Was that a period that you essentially adopted,

150

1 or did you conduct some independent verification of the
2 propriety of using that period?

3 A. It's an assumption that we adopted and decided
4 we agreed with.

5 Q. So, you weren't directed to use that period?

6 A. No. We were not directed to use that period.

7 Q. You did not use the same crop mix distribution,
8 did you?

9 A. I would have to check on that.

10 Q. That discussion is at five of your report.

11 A. Roman five or --

12 Q. No.

13 A. No. Page five. I believe....I believe that
14 their crop yield model and model which they used for
15 calculation of returns from the crops actually
16 internally calculated some of the crop mix, and as a
17 result of the model, we chose not to use that approach
18 since we did not accept the full logic of their model.

19 Q. Okay. I understood that they had NASS data --

20 A. Well, you know --

21 Q. -- for 2000 -- excuse me, from 1994 to 2000.

22 A. That was at least the initial in.... Okay.

23 Their -- the paragraph that starts at the middle of page
24 five under the heading H, KBID collects and reports
25 information on irrigated crop mix across years both

151

1 above and below Lovewell, but it does not collect
2 non-irrigated crop mix information. For that, we used
3 the NASS data. So, they use NASS data for non-
4 irrigated.

5 Q. Okay.

6 A. We have that in common. Although, I didn't --
7 I did not -- I guess I did not verify whether my -- my
8 particular analysis of NASS data was necessarily theirs.

9 Q. Okay. And then the last sentence of that
10 paragraph indicates that they used this period 1994 to
11 2000 to determine the crop mix that would have been
12 grown in 2005 and 2006; is that right?

13 A. That's what the sentence says.

14 Q. And if I recall our discussion yesterday, you
15 indicated you elected not to do that because of this
16 flux --

17 A. Correct.

18 Q. -- in the crop mix?

19 A. Correct.

20 Q. And for the non-irrigated crop mix about half
21 way down in that paragraph in Section I, I believe it
22 indicates that they used the NASS data for 2005 and
23 2006?

24 A. Yes.

25 Q. But again, you used the 2010 data; is that

1 right?

2 A. Yes.

3 Q. And that was due again to this flux --

4 A. Yes.

5 Q. -- situation?

6 A. Yes.

7 Q. Let me direct your attention to page two of
8 their report under the heading called Water Response
9 Functions.

10 A. Is that page Latin two? Arabic two?

11 Q. Arabic, yeah. Close enough.

12 The third sentence down begins, But since our
13 analysis..., do you see that.

14 A. No. What heading are you under?

15 Q. Water Response Functions.

16 A. Yes. Oh, the third sentence, okay.

17 Q. Could you read those two -- those next two
18 sentences for me?

19 A. But since our analysis was specific to 2005 and
20 2006, the water response functions must also incorporate
21 actual precipitation. We use the word "precipitation"
22 and "rainfall" interchangeable in this report.

23 Q. And the next sentence.

24 A. Otherwise, we would not have been able to
25 account for weather in 2005 and 2006 were years that

1 required more or less irrigation water than normal.

2 Q. Two questions. Did you conduct a similar
3 analysis, and if so, how is that incorporated in your
4 report?

5 A. I did not and....

6 Q. Okay.

7 A. No, I did not.

8 Q. And is that because you disagree with that
9 statement that appears on this page?

10 A. No. That was the portion of the analysis which
11 was the responsibility of Professor Klocke.

12 Q. So, the decision whether to evaluate the actual
13 effect of rainfall in '05 and '06 was something that Dr.
14 Klocke decided?

15 A. Yes.

16 Q. Okay. Do you have an opinion about that
17 decision?

18 A. No.

19 Q. Do you agree with it, or do you simply accept
20 it for purposes of this analysis?

21 A. I accept it for purposes of this analysis.

22 Q. Let me turn your attention to page six of this
23 report. Its heading is Irrigated Crop Yield. The third
24 sentence down begins, We started establishing expected
25 yields in 2006. Do you see that?

1 A. Yes. In the first paragraph?

2 Q. Yes, sir. As I understand this, they
3 essentially use a linear time trend from 1960 through
4 all the way to 2006 to figure out what yields should
5 have looked like; is that correct?

6 A. That is what the report says. I -- I have
7 not -- I have -- I do not like their modeling approach.

8 Q. Let me just compare their Table 10 with your
9 Table 14. And with regard to their Table 10, if you
10 look down towards the expected yield for fully irrigated
11 ground below Lovewell in 2006 for corn, do you see a
12 yield of two O six point one?

13 A. I see that.

14 Q. And your yield comes out for that same
15 situation, I believe, at one seventy-nine in your Table
16 14; is that right?

17 A. That is correct.

18 Q. Can you explain to me what creates that
19 difference in terms of how these models apply?

20 A. As I said, I -- I do not like their modeling
21 approach. It required mixing in trends and several
22 calibration adjustments which to me are obtuse, and I
23 basically didn't like -- didn't pay much attention to
24 their yield results because they come from a model that
25 I can't defend.

155

1 Q. Okay. But to be clear, can you explain to me
2 the function of the two different models, and how they
3 each arrived at different conclusions, or is that
4 something I should ask Dr. Klocke?

5 A. Yeah. I think you should ask Dr. Klocke. I
6 won't defend their model.

7 Q. Why did you choose the model that you chose to
8 use in the present analysis?

9 A. Because it -- the model is more consistent with
10 my understanding and joint understanding in talking with
11 Klocke about the nature of plant growth, the typical
12 shapes that the literature finds in terms of crop
13 response to water shape. The approach that we used is
14 more consistent with the literature.

15 Q. How is that model typically used?

16 A. I'm not sure.

17 Q. Is it used by farmers or insurance companies
18 or is it used to help people make decisions or --

19 A. Yes. It is used for all of those things.

20 Q. Is it typically used to project into the future
21 and certain responses?

22 A. Yes. It's used in IMPLANing. You know, if --
23 if we have this amount of water, we can expect this
24 yield response.

25 Q. So, the typical user would be maybe a farmer

156

1 who's trying to figure out how to optimize his
2 production?

3 A. That would be a possible usage, yes.

4 Q. Is it generally an optimization model?

5 A. It could be. I'm not sure I would agree with
6 generally. It's being used by the federal crop
7 insurance people to calculate insurance premiums and so
8 on. It's probably not an optimization model. It's more
9 nearly just a yield response function. Sometimes --
10 sometimes the response equations are used alone for some
11 purpose. Sometimes they serve -- sometimes they serve
12 as input to an optimization model.

13 Q. Do you know of any situations where the model
14 has been simply used essentially to backcast what might
15 have happened in any given year?

16 A. Yes. It's common for researchers who are
17 working on such models to check their results by
18 comparing the results of the model to historic data.
19 Klocke will talk about that, I'm sure.

20 Q. But has it ever been used like it's being used
21 here to backcast a likely irrigation scenario to then
22 calculate a damage claim?

23 A. We used similar approaches in the Arkansas
24 River case.

25 Q. But this model hasn't been used in that regard?

157

1 A. We used models of -- - we used similar models.

2 Q. But this specific model, is my question.

3 A. These specific equations with these particular
4 numbers have not been used. The same modeling framework
5 was used in the Ark River case. The work which was done
6 in the Ark River case was based on research by....

7 Q. I'm sorry. Continue please. .

8 A. The modeling which was done in the Ark River
9 case was based on work and testimony of Professor Leaf
10 (phonetic) Stone from KSU. Leaf Stone is a colleague of
11 Klocke's. They collaborate.

12 Q. Uh-huh. Can you provide me with any specific
13 examples, citations, or reports or any authorities where
14 this model has been used in that regard other than in
15 this Sunding case.

16 A. Dr. Klocke will provide those.

17 Q. How about any authorities talking about the use
18 of this model in the other context that you talk about,
19 the prospective planning context?

20 A. Again, Dr. Klocke is familiar with that
21 literature.

22 Q. Do you know who developed the IPYsim model?

23 A. KSU, but beyond that I don't know.

24 Q. You don't know if Dr. Stone was involved in
25 that?

1 A. I do not know.

2 MR. WILMOTH: Let's take ten minutes now.

3 MR. DRAPER: Okay.

4 (Whereupon, the deposition was in recess at
5 9:51 a.m. and subsequently reconvened at 10:04 a.m.; and
6 the following proceedings were had and entered of
7 record:)

8 Q. (BY MR. WILMOTH) Doctor, I just have a couple
9 of more questions.

10 A. Yes.

11 Q. I want to return one more time to this question
12 of crop yields.

13 A. Yes.

14 Q. And the issue of why there seems to be this
15 disparity between yields and water restrictions. And I
16 believe I understood you to indicate one explanation for
17 that would be that the water is typically applied to the
18 best lands first; is that right?

19 A. Yes.

20 Q. Did you make an effort to determine the
21 location within KBID of the best lands?

22 A. No.

23 Q. Do you -- what do you base your assumption on
24 that they would be irrigating the best lands?

25 A. My concept of the rationality of farmers.

1 Q. Is it invariably the case that irrigation

2 infrastructure reaches the best lands?

3 A. No.

4 Q. So, there are some situations in which the

5 irrigation infrastructure might reach the inferior lands

6 first, right?

7 A. Yes.

8 Q. But we don't know if that's the case or not

9 based on your analysis, right?

10 A. Correct.

11 MR. WILMOTH: That's all we have.

12 I did want to mark this, this is the document

13 we discussed yesterday.

14 MR. DRAPER: Which is that?

15 MR. BLANKENAU: The Economic Impact of a

16 Possible Irrigation-Water Shortage in Odessa Sub-Basin.

17 MR. WILMOTH: Would you mark that as your next

18 exhibit.

19 EXHIBITS:

20 (Deposition Exhibit No. 11 marked for the

21 record.)

22 (Discussion held off the record.)

23 MR. WILMOTH: Thank you, Doctor. I think your

24 counsel might have some questions but....

25 MR. DRAPER: Pete?

160

1 MR. AMPE: No questions.

2 MR. WILMOTH: Sorry, Pete.

3 MR. DRAPER: I think it might just be prudent

4 to take a minute with the witness, and then we will come

5 right back.

6 MR. WILMOTH: Okay.

7 (Discussion held off the record.)

8 MR. DRAPER: I think we are ready to go back on

9 the record for purposes of saying no questions.

10 (Deposition concluded at 10:43 a.m. Witness

11 excused; signature reserved.)

12

13

14

15

16

17

18

19

20

21

22

23

24

25

161

1 CERTIFICATE OF WITNESS

2 PAGE LINE

3

4

5

6

7

8

9

10

11

12

13

14

15 I hereby certify that this is a true and
correct copy of my testimony, together with any changes
16 I have made on this and any subsequent pages attached
hereto:

17

Dated this day of , 2012.

18

19

JOEL R. HAMILTON, Ph.D., DEPONENT

20

Sworn and Subscribed before me this
21 day of , 2012.

22

23

NOTARY PUBLIC FOR THE STATE OF IDAHO
Residing in , Idaho
My Commission Expires:

25

1 C E R T I F I C A T E

2 STATE OF WASHINGTON)
) SS.
3 County of Whitman)

4
 I, GLORIA J. McDOUGALL, CSR, RPR, CP,
5 Freelance Court Reporter and Notary Public for the
 States of Idaho, Idaho CSR No. 234; and Washington,
6 Washington CSR No. 2353; residing in Clarkston,
 Washington, do hereby certify:

7
8 That I was duly authorized to and did report
 the deposition of Joel R. Hamilton, Ph.D., in the
9 above-entitled cause;

10
 That the reading and signing of the
11 deposition by the witness have been expressly reserved.

12
 That the foregoing pages of this deposition
13 constitute a true and accurate transcript of my
 stenotype notes of the testimony of said witness.

14
15 I further certify that I am not an attorney
 nor counsel of any of the parties; nor a relative or
16 employee of any attorney or counsel connected with the
 action, nor financially interested in the action.

17
18 IN WITNESS WHEREOF, I have hereunto set my
 hand and seal on this 13th day of February 2010.

19
20

21
 GLORIA J. McDOUGALL, CSR, RPR, CP
22 Freelance Court Reporter
 Notary Public, States of Idaho
23 and Washington
 Residing in Clarkston, Washington
24 My Commissions Expire: 10/06/15
 and 10/01/15

25